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American Journal of Hospital Pharmacy

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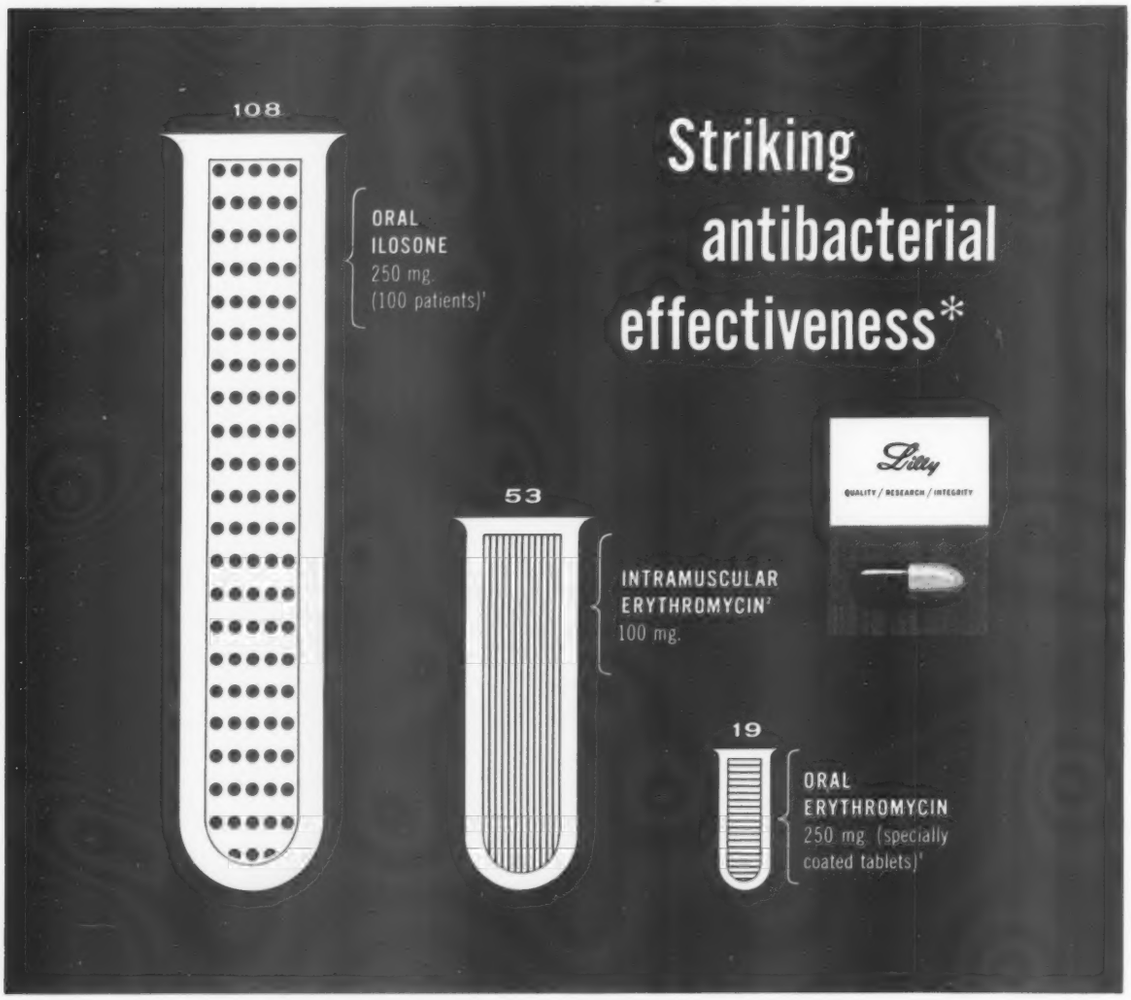
FORMERLY The BULLETIN

DEVELOPING A SPECIAL COMPOUNDING SERVICE



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1. Griffith, R. S., *et al.*: Antibiotic Med. & Clin. Therapy, *5*:609 (October), 1958. Note: Peak levels with the oral erythromycin tablets (thirty-three dilutions) were not observed until four hours after administration. 2. Data from Griffith, R. S.: Antibiotics Annual, p. 269, 1954-1955.

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Dear Sirs:

Clarification of Legal Requirements

DEAR SIRS: I have read Dr. Archambault's article in the July issue of the AMERICAN JOURNAL OF HOSPITAL PHARMACY and am very well pleased with it. Like many other hospital pharmacists, I am anxious to have many of the details of legal requirements for our pharmacies clarified. Your treatment of the question of drug dispensing and drug administration had many helpful points.

May I suggest for a future issue of the JOURNAL, an amplification of the Industry Memorandum issued by the Alcohol and Tobacco Tax Unit regarding "Special Tax Liability by Hospitals for Dispensing Alcoholic Liquors," and also published in the July issue of the JOURNAL. The specific question that arises is whether the hospital is permitted to purchase alcoholic beverages from a retail source for a specific patient, and charge the patient exactly the retail price paid by the hospital. In this case, is the hospital considered as selling the beverage, or merely as an agent acting for a patient in purchasing it for him?

If this is not permitted, then what procedure can the hospital follow when alcoholic beverages are ordered by a physician for a patient?

I shall be watching for your column in future issues of the JOURNAL.

SISTER ROSE BERNARD, *Pharmacist*

Queen of the World Hospital
Kansas City 27, Missouri

EDITOR'S NOTE: See column on The Law of Hospital Pharmacy started in the November (1958) issue of this JOURNAL and concluded in this issue (See page 36).

Formulary Service

DEAR SIRS: Please send me one copy and supplements to your "Hospital Formulary Service." It's a wonderful idea and I am trying to get my hospitals to use it.

R. L. SHANELY, F.A.C.A.

Shanely Prescriptions
Piqua, Ohio

Compliment

DEAR SIRS: . . . We surely appreciate the work you are doing for hospital pharmacists, particularly the JOURNAL which has been a great help for all of us. It seems that just about the time we have a problem which is new to us, we find a solution in the next issue of the JOURNAL. For example, the article on "The Role of a Pharmacist in the Functioning of a Poison Information Center," which appeared in the October issue. Our pharmacy has taken the responsibility of taking calls for such a service from 8:00 a.m. until 5:00 p.m. Since we had not yet heard of other pharmacists doing this, consideration was being given to the possibility of delegating this to the emergency room or receiving room. At that time, we found this encouraging article in the October issue of the JOURNAL.

The chairman of the Poison Information Center would appreciate a copy of either the October issue of the JOURNAL or a reprint of the article . . .

SISTER M. EMMANUEL, O.S.B.
Director of Pharmacy Service

St. Alexius Hospital
Bismark, North Dakota

Interest in Abstracts

DEAR SIRS: Please send me a copy of your paper entitled "Some Considerations in the Preparation of Pharmaceutical Abstracts." Thank you for this courtesy.

HAROLD OATFIELD

Chas. Pfizer & Co., Inc.
Brooklyn, New York

DEAR SIRS: I would appreciate receiving a copy of your paper, "Some Considerations in the Preparation of Pharmaceutical Abstracts."

B. H. WEIL

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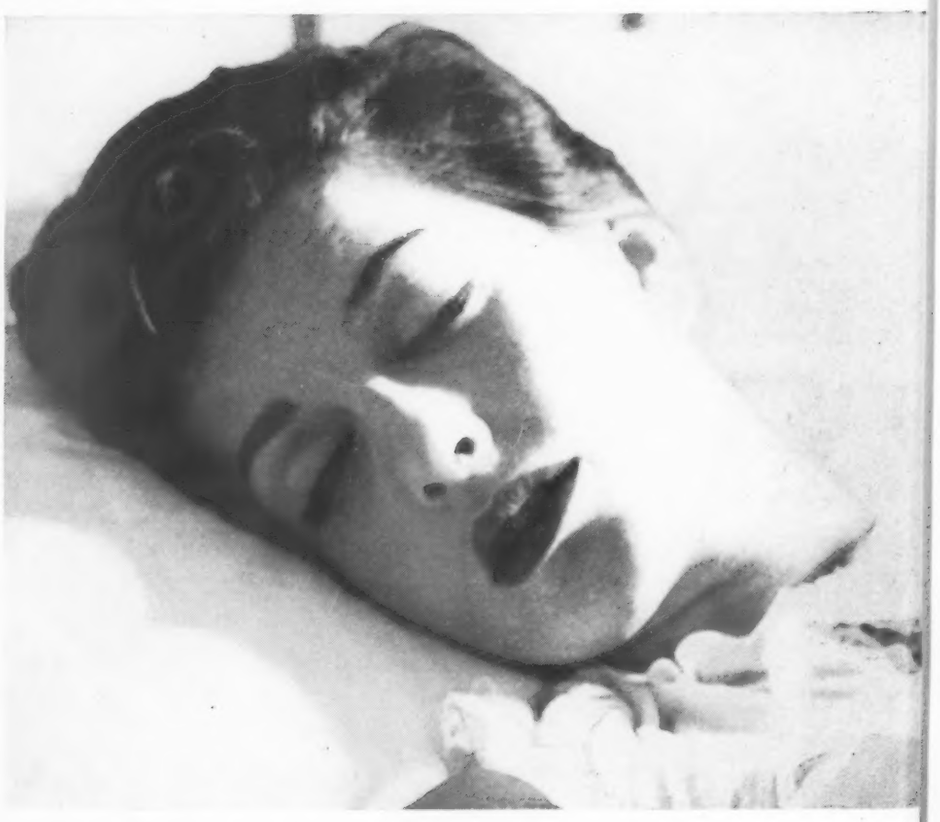

MEDICAMENTA VERA

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editorial

by DON E. FRANCKE

The Pharmaceutical Industry and Hospitals

► APPOINTMENT BY THE NATIONAL PHARMACEUTICAL COUNCIL of a staff member to devote full time to hospital activities is an interesting development which calls for thoughtful consideration by the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, the American and Catholic Hospital Associations, and the American Medical and allied Associations.

In announcing this appointment, the President of the National Pharmaceutical Council explained, "We are now on the brink of expanding our operations to include the areas of pharmacy served by hospitals." Commenting on the task to be done, the NPC President continued, "It will be his mission to explore the entire field of hospital pharmacy. In the exploration, we shall hope for the furtherance of mutual understanding and for the establishment of a closer liaison between the National Pharmaceutical Council and the hospital pharmacists, administrators, and physicians."

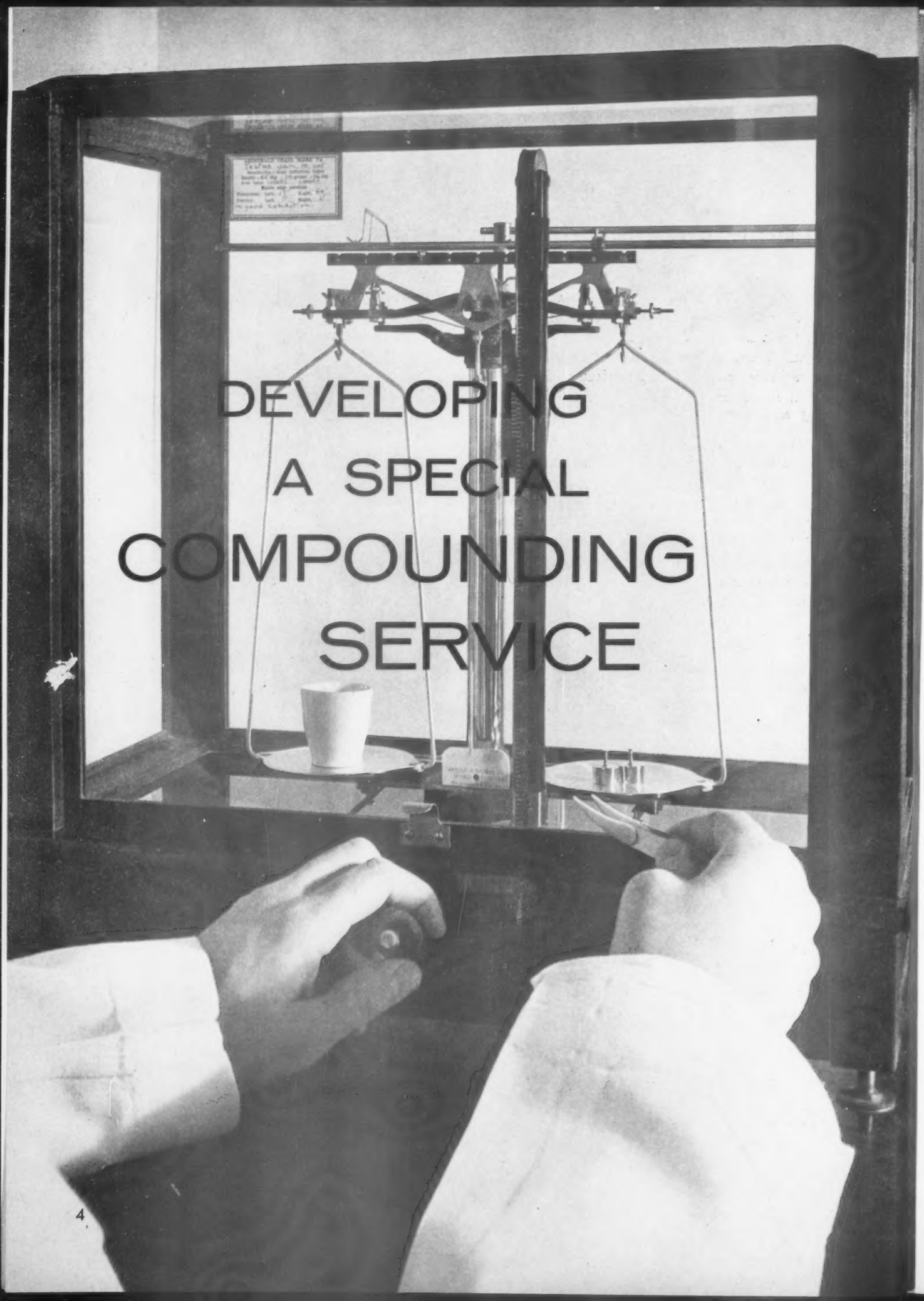
Undoubtedly, NPC's hospital relations representative will be expected to establish contacts with the officers and leaders of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS and its affiliated chapters and to speak at local and national hospital pharmacy meetings and others whenever possible. Since the hospital is a complex organization, the job will probably involve meetings with representatives of hospital administration, and not only medical practitioners but also students, interns and residents. In certain instances it may be expected that the aid of state Boards of Pharmacy may be requested to assist in carrying out the program. Efforts directed towards deans of pharmacy, professors of hospital pharmacy, internship programs may also be anticipated.

Such activities on the part of NPC would, of course, necessitate a complete and thorough re-examination by representatives of hospital administration, medicine, and hospital pharmacy of the role and relationships of the pharmaceutical industry in hospitals. It may be that such a re-examination is long overdue. Certainly the pharmaceutical industry is important to hospitals—but the reverse is equally true. In such a re-examination, it is obvious that hospitals will have a great deal to say concerning future relationships between the two groups. Furthermore, hospital personnel will be given an opportunity to discuss problems created in hospitals by certain practices of the pharmaceutical industry. Such two-way communication is essential for the establishment of progressive understanding and mutual confidence. We welcome steps on the part of the pharmaceutical industry to promote closer liaison with those in hospital practice.

It is fortunate that the SOCIETY has already established a Liaison Committee with the NPC for the purpose of exploring mutual problems. This Committee has held two meetings with representatives of the NPC at which considerable progress toward greater mutual understanding between the two groups was made. However, since the existing problems concern not only hospital pharmacy and the pharmaceutical industry but also hospital administration and medical practitioners, it may be well for the SOCIETY to consider recommending the establishment, under joint sponsorship, of an overall committee or study panel to which would be appointed representatives of hospital associations, medical associations, and the ASHP. Possibly communications would be facilitated if the pharmaceutical industry were invited to name representatives to serve on this committee.

Practices of the pharmaceutical industry which might be studied include first, the general practices of the industry in the distribution of drugs which directly or indirectly affect hospitals and, second, those practices which relate more specifically to the evaluation and distribution of drugs in hospitals. Examples of these are common knowledge to practitioners of hospital pharmacy.

No one will question the statement that the American drug industry is the finest in the world nor will anyone challenge the prime position of American hospitals. Perhaps it is time for representatives of each group to explore the practices of the other and to bring about greater mutual understanding and a closer liaison. But let us make sure that the understanding brought about is truly mutual and of benefit to society and, in particular, to the patient who after all is our principal concern. Here is a challenging opportunity for two important groups in our society to work cooperatively together for the betterment of patient care.



DEVELOPING A SPECIAL COMPOUNDING SERVICE

the hospital pharmacist has a responsibility to be able to provide to the patient any special form of medication which may be prescribed by the physician

by CLIFTON J. LATIOLAIS

► PROVIDING A HIGH QUALITY OF PATIENT care in the hospital has resulted in complex integration and utilization of talents in diversified fields of specialization. Each member of the hospital team possesses special knowledge and skills in his respective field. He must utilize these talents not only in his direct relationship to the patient but he also has an obligation to offer his services to other members of the team. Only when this concept is fully realized can the hospital provide the patient with a quality of care that is difficult to surpass.

Pharmacist's Responsibility

The hospital pharmacist has a responsibility to be able to provide to the patient any special form of medication which may be prescribed by the physician. Certainly, the pharmacist can utilize his knowledge and skills in offering a "special compounding service" —a basic responsibility of any pharmacist, but an area which has been seriously neglected by many hospital pharmacists.

Special compounding service is that area of pharmaceutical practice which deals with the preparation of any specialized form of pharmaceutical product which may not be readily available. When such a product is prepared for only one patient, it is called compounding; when prepared for a multiple number of patients, or in advance of the need, it is called bulk or volume compounding.

Objective of Bulk Compounding Program

The common concept of a bulk compounding program in hospital pharmacy is simply the preparation of large quantities of drug preparations at a supposedly lower cost than their commercial counterparts. If you would peruse the literature that has been published on this subject during the past 10 to 15 years, I am sure you would agree that this has been the predominant concept of a bulk compounding program. I firmly believe that this concept, based on economy as the primary objective, has played an important role in hampering progress toward the development of a "special compounding service"—an essential element in good pharmaceutical practice in hospitals.

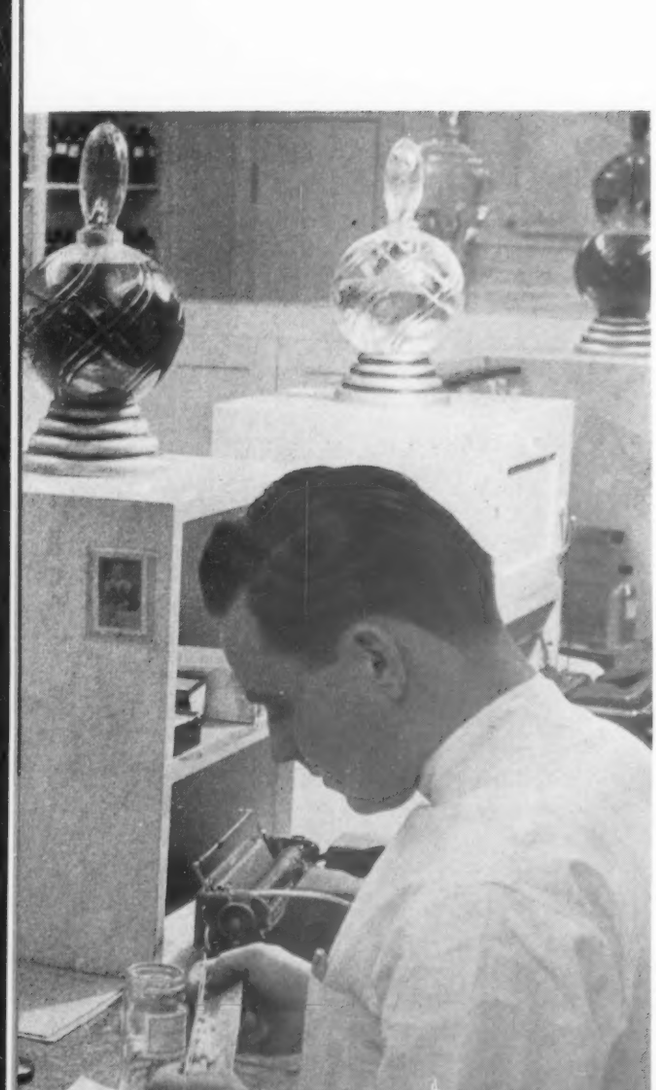
The basic reason behind this is the fact that pharmacists have been so busy trying to prepare simple, standard products to save money that they have not had time to utilize their knowledge in promoting the real need for their talents within the organizational framework of the hospital. In so doing, many pharmacists have *not* paid enough attention to properly equipping their departments in order to provide an all-inclusive compounding service. For example, many hospital pharmacies are equipped to prepare as much as 100 gallons of some galenical solution, elixir, or what-not, but do not have the proper facilities merely to prepare only one liter of an extemporaneous intravenous solution or even a 10 milliliter multiple dose vial of special medication for one patient.

One of the reasons for this inadequacy of hospital pharmacy facilities and equipment is that pharmacists have not carried forward, to a sufficient degree, their basic responsibility toward providing a special compounding service.

The pharmacist has not been able to justify the need for equipment on the basis of the economic factor alone. The major objection administrators present to pharmacists is that they are not convinced that small scale manufacturing can compete economically with mass production techniques of the pharmaceutical industry. In addition, space is at a premium, personnel and operating costs have skyrocketed, and legal risks have increased with the relaxing of the charitable trust immunity doctrine in many areas. In the final analysis, administrators feel that there are practically no problems if all the drugs are purchased from commercial sources. They feel, therefore, that there is no need to equip a hospital pharmacy for a bulk compounding program.

CLIFTON J. LATIOLAIS, M.Sc., is Director of Pharmacy Service at Ohio State University Health Center and Assistant Professor of Pharmacy in the Colleges of Pharmacy and Medicine, Ohio State University, Columbus, Ohio.

Presented at the Institute on Hospital Pharmacy, Temple University, Philadelphia, Pa., June 1958.



On the other hand, if hospital pharmacists had concentrated on working more closely with the medical staff to find out about the need for drug products and dosage forms not commercially available, or the improvement of commercially available products to more adequately serve the needs of the patient, or to assist the physicians with dosage forms of drugs under clinical investigation, or to assist research groups in the hospital on all matters pharmaceutical, then I believe that hospital pharmacists could justify the need for obtaining the necessary equipment, as well as personnel, to provide services that are essential to the patient. These services, recognized by the medical staff, cannot be obtained except through the pharmacist, in spite of the vastness of the pharmaceutical industry.

Please do not misinterpret my remarks. I did *not* say that a hospital pharmacy bulk compounding program cannot effect savings on certain products over their commercial counterparts. I said that *economy,* although important, should *not* be the primary objective of a bulk compounding program; *service* should be the primary objective.

Thus, the primary objective of a bulk compounding program is to place at the disposal of the medical staff the most suitable and effective forms of medications necessary to meet specialized needs of the patient. To do so, the pharmacist should have at his disposal the necessary equipment to prepare products not readily available. As a *secondary* consideration, with such equipment available, the pharmacist may be able to prepare certain products more economically than their commercial counterparts.

Steps In Planning A Bulk Compounding Program

Let us consider the factors related to the development of a bulk compounding program in the hospital pharmacy. First, a certain amount of space is needed. Second, special equipment is essential. Third, personnel are needed to do the job.

But before one can determine space, equipment and personnel requirements, he must consider the types of products that are needed and the quantities to be prepared. This is essential because the types of products to be prepared directly affect the kind of equipment needed. Likewise the quantity to be prepared affects the size of equipment. For example, certain types of pharmaceutical preparations like ointments, emulsions, lotions and suspensions require some type of equipment that will reduce particle size, that is, equipment like a colloid mill or homogenizer. Or liquid galenicals such as solutions, elixirs, syrups and tinctures require mixing and filtering apparatus, and so on.

List Types of Products

The first step in planning a bulk compounding program is to prepare a list of all the products which might

be compounded, categorizing this list by type of pharmaceutical product and then determining the quantities to be prepared. One should be selective in listing the products to be prepared in volume. Preliminary cost studies should be made to determine the feasibility of preparing any product which is commercially available. In addition, a check should be made regarding patent rights covering certain drug products.

Serious consideration should be given to the matter of quality control. If the pharmacist feels that assay procedures on a product are either too costly or complicated, then he should not consider compounding this product in volume. When economy is the prime objective of a compounding program, there is a dangerous tendency to omit assay and other control procedures. However, the pharmacist may obtain valuable assistance from other hospital departments with regard to assay and control procedures. For example, the Bacteriology Department can probably perform sterility tests more economically and more efficiently than the Pharmacy. Quantitative assay procedures may be done in the hospital's clinical chemistry laboratories which are generally well equipped with quantitative analytical apparatus. Hospital pharmacists are trying to promote their services to the other members of the hospital team; so are the other professional groups trying to do likewise, and in most instances are eager to assist the pharmacist on problems of mutual concern.

Determine Equipment Needs

The second step is to determine the equipment requirements. Having previously determined the types of products to be prepared, one could more easily outline the types of equipment needed; and by knowing the quantities to be prepared, one could easily choose the size or model of equipment most suited to the job. Helpful aids to the selection of equipment are available from the "Suggested Equipment Lists for Hospital Pharmacies" prepared by the Division of Hospital Facilities of the Public Health Service. This list was published in the Mar.-Apr., 1951 issue of *The Bulletin of the American Society of Hospital Pharmacists,* page 102. Mr. Herbert Flack and his associates have prepared a "Manual on Equipment and Supply Sources for the Hospital Pharmacist." A brief description of the contents of this manual was published in the July 1956 issue of *Hospital Management* on page 84. Also, the AMERICAN JOURNAL OF HOSPITAL PHARMACY (formerly *The Bulletin*) has for many years carried brief descriptions of various types of equipment in the Notes and Suggestions column.

Determine Personnel Needs

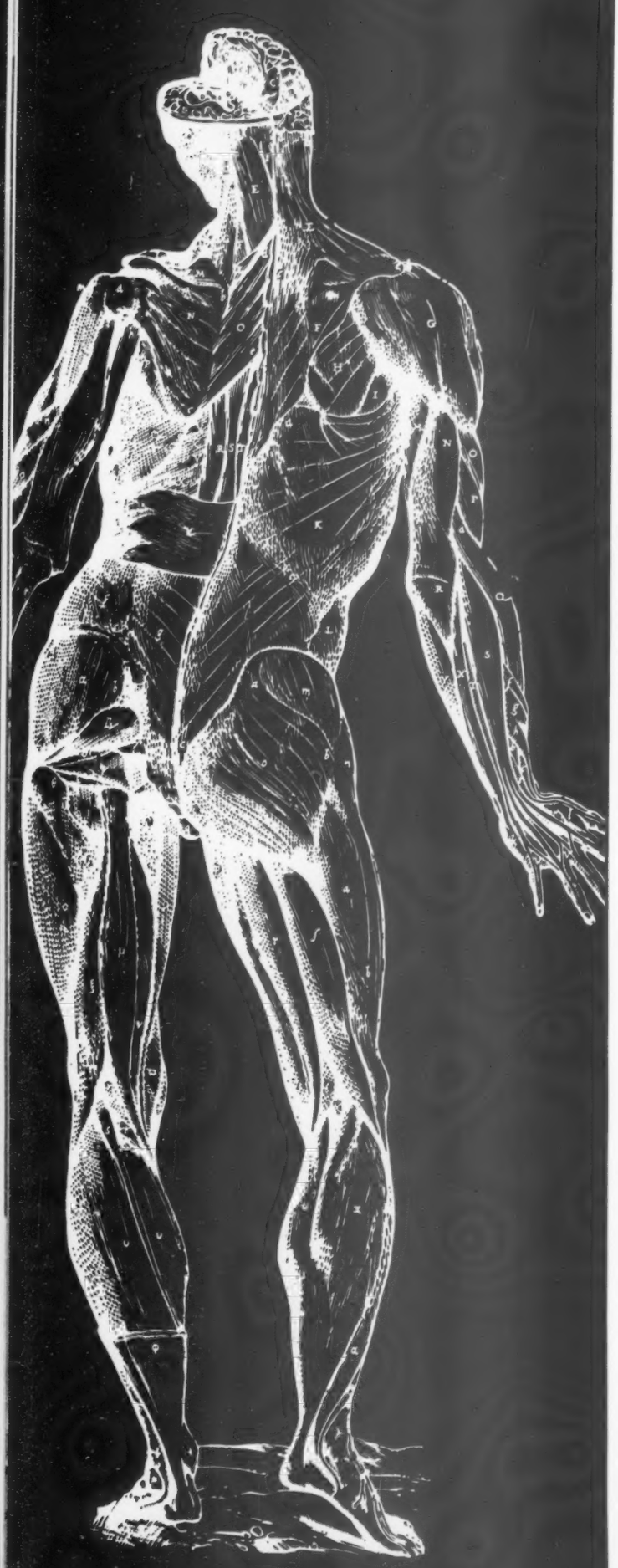
The third step in planning a bulk compounding program is to determine, as closely as possible, the number of man-hours required to prepare the anticipated number of products. This would include time requirements for pharmacists as well as for nonprofessional personnel. The amount of responsibility assigned to nonprofessional personnel should be clearly outlined. Upon completion of this estimated study, one could more accurately determine the number of additional personnel required, if any, to initiate a bulk compounding program.

Now that a list has been prepared of the products to be compounded, the type and size of equipment has been selected, the number of personnel has been determined, then the fourth step is to determine the area of floor space required to establish the compounding program. In addition, the prepackaging program is closely related to the bulk compounding program and should be given careful consideration during the entire planning procedure. These are the major factors which must be considered in determining space requirements for the immediate needs. Consideration should be given to the possibility of expansion of the hospital's facilities and/or services as this expansion may affect the Pharmacy's overall operation. The "Suggested Floor Plans for Pharmacies in 50, 100 and 200 Bed Hospitals" prepared by the Public Health Service is a valuable aid in determining the amount of space needed for bulk compounding procedures. These plans were published in the May-June, 1950 issue of *The Bulletin of The American Society of Hospital Pharmacists.*

When the plans for a bulk compounding program have been outlined, the next and most difficult step is to submit this proposal to the administrator for approval. Here is one area where a Pharmacy and Therapeutics Committee can be of inestimable value. If the pharmacist plans a bulk compounding program on the basis of additional services it will provide to the medical staff—services that are not available from any other source, then he is in a sound position to obtain the approval of the medical staff through the Pharmacy and Therapeutics Committee. With a positive recommendation from this source, the pharmacist should be able to initiate a special compounding service on at least a small scale.

Conclusion

I have tried to outline to you the various steps which I consider essential for planning a bulk compounding program. Perhaps you may be able to add to it. The final step I mentioned was to obtain the administrator's approval to go ahead with the program. Assuming that you have done just that, the next step is to implement such a program. Therein lies a multitude of problems which must be solved but they are an important part of the hospital pharmacist's professional responsibility to the patient and the medical staff.



NEW PATTERNS OF MEDICAL PRACTICE

by KENNETH E. MCINTYRE

► I HAVE BEEN ASKED TO SPEAK ON A SUBJECT THAT is currently of major interest to everyone concerned with the problem of medical care. This relates to a philosophy of medical practice and to the implications of that philosophy. To epitomize an ideology of practice is relatively easy. Actually, among most men of good will there would be little difference except in semantics if the discussion were to be confined to the philosophical objectives of medical care.

However, in the complex society in which we live, the mere statement of objectives is to an extent, irrelevant, unless those objectives are related to new concepts in the structure and distribution of medical services. To be entirely blunt, it is only an academic exercise to speak of ideological goals unless one is willing to undertake the much more difficult job of translating these goals into practicable action. This last inevitably means a study of the interrelationships between ideology and the necessary structural framework in which ideological goals are attainable. There can be no argument with the truism that the end of medical practice is sound patient service. This means that the entire gamut of medical resources should be dedicated to the discovery, amelioration or elimination of patient problems. It means the organization of research; it means the distillation of knowledge from multiple disciplines into usable form for the practicing clinician. In short, it says that modern medicine exists for the patient who is, after all, you and the man or woman next to you.

Thirty years ago a translation of this service ideal into practical reality was relatively simple. A young man coming out of medical school was a doctor, and after an internship, in most cases, he hung up his shingle and took care of, as best he could, the problems which were brought to him. This was an era of descriptive medicine for the most part. The pathogenesis of most diseases was frequently not known and specifics in therapy were relatively few. In consequence, treatment was largely symptomatic.

Trend to Specialization

Today's situation has changed. I need hardly dramatize for this sophisticated group the spectacular advances that science has made in the last several years. I need hardly tell you that medicine at its best has become a science and that, to function properly, the modern physician must be disciplined in his knowledge in a way unthinkable fifty years ago. Indeed, the gamut of knowledge has become so great that it is now impossible for a university level of medicine to be practiced by one man in all fields. This has meant inevitably, and notwithstanding the protestations of the generalists, that the age of specialization is not only here, but necessary. The trend to specialization will continue, and new and narrower fields will prevail.

Along with this spectacular growth in the fund of medical knowledge has been an equally formidable increase in the costs of medical care. I am not speaking merely of the cost of an isolated office visit to a practitioner of medicine, I am speaking of the inevitable costs that accrue to a patient with a medical problem who is properly evaluated when he approaches a well-trained physician.

Today's medicine demands that we make a diagnosis. In that demand is implicit the use of a host of laboratory and X-ray procedures which only yesterday were not available. The very fact that we now possess knowledge that yesterday was not available, means an increase in the costs of medical care. The use of the electrocardiogram is mandatory in all cardiac evaluations, yet it was not until the late 1940's the routine precardial leads became standard. Evaluation of the serum lipids has become commonplace in many organizations interested in clinical arteriosclerosis. Who would have considered investigations of this problem a matter of clinical value 15 years ago? Today's battery of laboratory procedures are not academic playthings but are necessary tools in the complex procedure of patient evaluation. A serum transaminase, a C-Reactive protein, the latex fixation test, the L. E. cell, and a host of other procedures were not even in the practitioner's lexicon only 10 years ago. Delineation on the hemoglobinopathies has been practically possible only since the introduction of paper electrophoresis in 1950. Thus a great new technology is helping us to delimit, to define, and to explain clinical problems that were not even recognized a few years ago.

Knowledge Is Expensive

This vast expansion of knowledge is dynamic and significant. It is also expensive. Yet in our society we can never agree that cost should preclude availability. We cannot recognize differences in human needs based on ability to pay. Morally there can be only one standard in medicine, and ways must be found to make our finest service every patient's right.

It seems to me that we are faced with two facets of this problem parallel in their urgency. In the first instance, there is the sheer economic difficulty that many patients face in meeting the costs of medical care on the level of which I speak. This is a problem in medical economics. In the second instance, there is the problem of maintaining a level of service which protects both the patient and the doctor against the erosions of practice.

The solo practitioner finds real difficulty in meeting the tyranny of increasing demands. He is duressed into trial and error diagnosis, symptomatic treatment, and education by detail men. Sheer numbers can and will preclude anything but a superficial approach

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KENNETH E. MCINTYRE, M.D., is Director of Metropolitan Hospital and Clinics, Detroit, Michigan.

Presented before the Hospital Pharmacy Seminar sponsored by the Michigan Society of Hospital Pharmacists, the College of Pharmacy of Wayne State University, and Pfizer Laboratories, Detroit, November 22, 1958.

to the problems of practice. This is not an unthinking condemnation of our many sincere and dedicated practitioners. It is a recognition that a better method must be found to maintain the quality of an essential service. I believe this is as necessary for the physician as it is for the patient.

Group Principle In Medical Practice

These are very real problems. We cannot deny them by insisting that America has the finest medical care in the world. Certainly our stature in the medical scientific world is well recognized. No one would seriously question the standards of our fine medical schools and our many great clinics. Yet there is a tremendous lag between what is commonplace at the university level and what is translated into daily practice availability. This problem of availability, to repeat, is both professional and economic. Medicine must recognize that there are valuable lessons to be learned from many disciplines and that organizational techniques can be profitably applied to the distribution of medical care. There must be a general acceptance of the fact that altering the structure of practice in no way implies a denial of the ideological goals of patient service. On the contrary, the many studies to date would indicate that service can be broadened and elevated only when there is careful thought to organization. The application of the group principle to practice is one such step which recognizes that efficiencies can be introduced to medical care. The savings effected by the elimination of duplicate laboratory and X-ray facilities are substantial and need only be mentioned as an obvious illustration. If dollar savings represented the only justification for group practice, we could accept its leisurely development. However, group organization provides a *modus operandi* for dealing with our new technology. The group integrates a host of specialties and makes available a composite mind which dwarfs individual capacity. In our formulation of the group approach, there will always be a personal physician but he will use the composite knowledge of many disciplines. It is this opportunity for new professional efficiency that gives the need for group organization its urgency.

Third Party Interests

Medicine must accept the fact that there will be and must be new restrictions on individual prerogatives. There are and will be interested third parties who will be actively engaged in formulating the agreements under which medicine will be practiced. We do not mean to abandon professional responsibilities or prerogatives. We do insist that there will be an increasing interest in the processes of medical care by insurance plans, organized labor, industry, and the public at large. Medicine cannot continue to ignore the prerogatives of these groups by terming every manifestation of interest, socialization. It must be recognized that many legal fictions now incorporated in so-called ethical concepts must be abandoned. Medicine must abandon its insistence that fee-for-service is the only ethical relationship that can obtain between physician and patient. It must accept the fact that group practice can offer an ethical equivalent for fee-for-service. Only with proper organization can medical practice be returned to the people as a service profession. Fee for service may be a great motivation to many. To say that this type of stimulus offers the best assurance of individually good care is to deny a whole profession both dedication and sensitivity to the needs of man.

For these considerations, I believe it is apparent that both logic and moral necessity demand that we re-evaluate our methods of dispensing medical care. We can no longer accept the sophistry that there is a division between medical and hospital service. We feel that the segmentation of the patient should stop and his increasingly fine dissection into areas of economic interest is no longer acceptable. The patient is interested in a unified service for which he pays a single acceptable charge. We believe that medical care must be comprehensive to meet this demand and that the entire gamut of medical needs must be provided by a group organization competent to provide integrated service.

Hospital-Based Practice

What I have said, then, indicates that medical practice will unquestionably be built around a hospital center. Some of these physicians will be housed at the hospital center and the entire range of specialties will be represented. Others will function primarily in auxiliary neighborhood clinics. These clinics will vary in their services, but will emphasize family care as opposed to the more specialized service of the hospital center. Yet all the men will be part of the group which will function as an active force in the control and destiny of the whole organization. The physicians will not participate in the financial returns of the medical center. They will be salaried. The salary will be generous and it will permit the physician to forget his economic struggles with the patient and devote his energies to his professional service. The organization of the group practice within this hospital center must permit the individual physician to recognize his responsibility for the success of the center. This success is defined in terms both of the finest patient service and necessary financial solvency. The center must provide intellectual nurture and fellowship for doctors in the group. The leadership of the group must be responsible for establishing an atmosphere in which the physician can take pride in his service. It must inspire the physician to con-

tinue his personal growth and he must be taught to identify with the service ideal to which the organization is dedicated. The group ideals thus become the most important motivating factor in the maintenance of the integrity of the group. With proper organization, the doctors can and will become concerned with patient satisfaction and attitudes and they will insist that a continuing study be made of all aspects of the operation to insure that service continues to meet patient needs. With proper organization, the physicians will insist that quality studies be done not only by outside interested bodies, but by the physicians themselves as part of their continuing growth process. I believe that if this service concept is adequately dramatized and understood in a group practice organization, the men through their various educational conferences will study and evaluate their own case materials and will profitably criticize and improve their own activities. Such professional introspection and evaluation, I call an internal audit.

What I conceive, then, from the standpoint of group organization, is an integration of the physicians into the hospital and neighborhood service centers as part of the whole spectrum of service which the patient should reasonably expect. I have suggested that the group organization be structured so that the individual physician, himself, undertakes responsibility for the quality of the services which are given by the entire organization. I believe that a group practice can be so organized that the physician comes to recognize that the group is part of his armamentarium without which he cannot practice medicine. Thus the group becomes more than a convenience and actually is one of his tools in meeting his professional aspirations. Under these circumstances he will covet the group relationship and aid in its growth and prosperity.

Need for Hospital Reorganization

I have said little about the structure of the hospital center itself. If the economic problems of medicine are to be solved this aspect of the problem must likewise flaunt tradition and boldy reorganize. The beds of the hospital center must be used effectively. The acutely ill patients must have one level of care which will be intensive, but as they recover, they must be moved progressively to areas where service is less concentrated and where they must rely more upon themselves or their families. We must obviate the unnecessary use of beds for diagnosis or overnight service by the provision of adequate diagnostic space and by inexpensive overnight facilities. We must have special sections for long term convalescents which will permit both rehabilitation and occupational measures to be instituted. Chronic disease responsibilities must be accepted and provision for this level of care made.

Patient education techniques must be applied and expanded and instructional space and materials must be supplied for patient use. Psychiatric facilities will be extensive and varied and medical and psychiatric social workers will actively participate in relating the center to other community facilities. Hospitals should not exist as isolated organizations but should be part of a co-ordinated effort in the solution of the patient's medical and social needs. An active department of medical social work is indispensable in achieving this co-ordination.

Everything that is done within the hospital center must be reviewed, weighed and evaluated on a continuing basis. If function is clear to all personnel, such a continuing re-evaluation will be certain to increase service efficiency.

Role of Pharmacist

I have said nothing of the place of our pharmacy in such an integrated structure. Manifestly, no complete medical service can be given without the professional services of a competent hospital pharmacist. His duties are three-fold: Educational, administrative and professional. In the type of group structure I am advocating, pharmacists will assume a key role in the education of physicians in the pharmacology of newer agents, in the introduction of new usages, and in the assistance of the varied programs of clinical research. I believe the pharmacist holds a vital role in bringing to the staff's attention some of the new advances in single usage drugs, for example, which may cut down two or three nursing visits per day per patient. The duties are economic, in addition, because the pharmacist is in a key position to control pharmacy purchasing and in the avoidance of excess costly inventory, etc. Thus, even with this brief comment about the pharmacist's role, I think you can see that he is a key professional person in my structure, fulfilling an entirely necessary facet of patient service.

What I have said may sound like an idealized formulation written from the armchair. This is far from the truth. Organizations are being so formed; some are now in existence. What should be realized is that the needs are so pressing and the forces moving in this direction so unrelenting that what I have formulated is only a brief period away. All of us, I believe, should recognize the essential logic and humanity of this approach and rather than fight it as is so frequently done by certain groups within organized medicine, it should be welcomed as an opportunity to return to medicine its service concept. This is beautifully stated in the Principles of Ethics quoted in part:

"The principal objective of the medical profession is to render service to humanity with full respect for the dignity of man."

Let us all work to this ideal.

HOW THE PHARMACY & THERAPEUTICS COMMITTEE FUNCTIONS

by JOSEPH P. CRISALLI

► IN THE MINDS OF THOSE WHO ARE NEW TO THE idea of a Pharmacy and Therapeutics Committee are the questions, "What is the Pharmacy and Therapeutics Committee? How is its business conducted and how are its recommendations put into effect?" Not long ago the Joint Commission on Accreditation of Hospitals referred to it as an educational and advisory tool that could be employed to advantage in most hospitals. Actually the Pharmacy and Therapeutics Committee is a forum in which the representatives of the medical staff and the Pharmacy are able to sit down and talk over policy proposals concerned with the selection, evaluation, and use of drugs. The Committee is an important element of communication between Pharmacy and medical staff where the views of each are expressed, and through open discussion are adjusted to the common interest. Generally the membership of the committee consists of the heads of the departments that have an interest in its work. This adds to the authority of the Committee.

Most of us are familiar with the way in which committee business is pursued. First there is the preparatory stage during which material for discussion that will make up the agenda is collected. Then follows the conduct of the meeting itself during which problems before the committee are threshed out. Lastly, there remains the important job of implementing the recommendations developed by the committee. As secretary, the pharmacist plays an integral part in each of these phases.

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Agenda

Getting material for an agenda requires diligent application by the pharmacist, for it is a matter of recognizing likely items for consideration and keeping notes on these as they come to his attention. Such items trickle into the Pharmacy from the medical staff, from the nursing staff, from committee members, and from other sections of the hospital. These items might include the observations of the pharmacy staff, pinpointing problem areas in the operation of the Pharmacy that have been created because of past committee actions and which could be solved best in open discussion. Proposed items for discussion might suggest refinements of policy within the scope of committee activity, which might be intended to enhance the operating efficiency of the committee, or laterally of the sections that are affected by such policy. Other suggestions might deal with restrictions placed on the usage of drugs which have impeded medical care of patients or have hindered the continuity of work flow.

Finally, suggested items will normally include formulary preparation and revision, as well as consideration of new drugs and the factors affecting their acceptance or rejection. All these are assembled and arranged into an agenda which is forwarded to the members a few days before each meeting.

The purpose of our agenda is to present an orderly arrangement of discussion matters to the members of the committee for their consideration. The agenda should be flexible, that is, we must allow for the introduction of items from the floor by the members if they so desire. The agenda should be suggestive, so as to stimulate thought in advance of the meeting, for then it will aid the discussion and make it thorough. The agenda may conveniently be divided into three headings: old business, what remains from the last meeting, new business as obtained from the notes of the secretary, and other business as presented by the members from the floor. Each of these subdivisions will include matters having to do with the selection of drugs for use from a policy, operational and financial standpoint.

The Meeting

The second phase of Committee activity takes place in the meeting room itself. The delivery of the agenda serves notice that a meeting will take place. A little before the appointed time, members are reminded of the meeting by telephone or through the public announcing system. The chairman will open the meeting promptly and his major function will be to keep things moving. Agenda items should be discussed thoroughly so that all perceptible implications of committee recommendations are carefully considered. At the end of the meeting a brief summarization should be made by the chairman. This task however, may be delegated to the secretary. The recorder must be capable of taking accurate minutes.

The Minutes and the Bulletin

In writing the minutes of the meeting care should be taken to record in sufficient detail all facts that have a bearing on committee decisions. All statements that affect the outcome of a matter under consideration should be reported so that these will be available for reference. Sometimes only affirmative actions are recorded with the result that the Committee has neither a record of negative actions, nor of its reluctance to take action under certain conditions. Because of this, the Committee may unwittingly reverse itself at a later time. To avoid this it is not only necessary

to record completely, but also for the Committee to review its previous position to make sure that no conflicting actions are in effect at the same time.

The minutes themselves can be made available to the staff as such, or it may be better to report committee proceedings in a bulletin or by memorandum. The bulletin should be favored perhaps for it is usually free of officialism and lends itself well to the reporting technique. It permits presentation of the necessary useful information without the burdensome redundancy that usually characterizes the minutes. The bulletin as a means of informing the staff may appeal to the committee members themselves who are desirous of keeping confidential some matters under discussion until ready for release. In reporting to the staff, the reasons behind committee actions, particularly with reference to controversial issues and rejected drug requests, should be clearly stated in the interest of better understanding and for the morale of the staff at large. When the bulletin is used as the reporting medium, the minutes should be available to those who request to see them; this, if required, with the approval of the chairman of the committee.

Getting information across and having people use it is exasperating at times. After the staff has been informed of the actions and recommendations of the Pharmacy and Therapeutics Committee, some people will abide by these for a time but then will lapse into old habits. This generally occurs with respect to policy or operational matters. Telephoning the individual or individuals as these infractions occur, is impractical because it is time consuming and annoying when it occurs repeatedly. It is often better to follow-up with casual reminders which could be read at the individual's leisure. The general format of such reminders may be dittoed or mimeographed using appropriate phaseology, leaving space for whatever advice need be inserted in writing. A very brief informal memo, captioned simply by the phrase "Memo from the Pharmacy" serves very well for this purpose, since it hints of friendliness and informality. Beneath this is written a brief note conveying the desired message without offensiveness.

Good Chairman Creates Interest

Most important for effective functioning of the Pharmacy and Therapeutic Committee is the interest the members themselves have in it. Disinterest is detectable among committee members, as frequently evidenced by the tacit approval given on matters under discussion after incomplete, half-hearted consideration. A recommendation adopted lackadaisically very often conflicts with a policy in existence and, if implemented, disrupts operations of departments affected, resulting in confusion. Good chairmanship calls for stimulating reticent members so that all may benefit from their opinions. The chairmanship may best be served if the clinical director holds this office, although a revolving chairmanship has worked very well in individual cases. In any event, a chairman should assume a neutral position ordinarily, his main function being to guide the course of the discussion, and of the meeting to a successful conclusion. The chairman however may express his opinion on a matter at the proper moment, usually after the others have reacted, in this way contributing to the outcome of the discussion. The chairman must have a good sense of timing, withholding his remarks until all others have spoken. He should never allow the feeling to prevail that he is making the decisions for the committee. His primary function is to see that there is full participation as well as complete discussion about each topic of the agenda.

Secretary's Participation

Much of the work of the secretary has been previously mentioned in passing. When the agenda has to be made, he discusses the matter with the chairman and together they compose a suitable one. The secretary should thoroughly familiarize himself about all items of the agenda for many questions will be directed towards him, since most matters in it will have a bearing on the work of his department. This is not necessarily true with respect to the other department heads who are members of the Committee. In order that the pharmacist-secretary participate more actively in the discussions, it is better that the recording of the minutes be assigned to some other person, preferably a nonmember such as a pharmacy intern. Where this has been done much valuable experience has been gained by the intern.

Shortcomings of Committee Activities

There are certain shortcomings that characterize Pharmacy and Therapeutics Committee affairs that should be corrected:

1. Agendas are too brief and are not suggestive. A simple one sentence statement or a leading question will serve to pinpoint the problem and help to crystallize ideas before the meeting.

2. Some possible causes of poor participation are lack of interest, deficient leadership, and poor preparation. Lack of interest can be sparked by good chairmanship, and by assignment of problem areas to the reticent individuals. One of the functions of the chairman is to obtain a good sample of opinions by directing his remarks to various members at different times. Poor participation is a primary cause of ill-conceived actions by a committee. These look good until one tries to carry them out.

3. To delay putting approved recommendations into effect may result in confusion. When a major change is to be put into effect we should make certain that a

date is specified. When no date is set, no more than a week should elapse. To wait longer will allow time for word to seep out via the grapevine causing confusion in the hospital and criticism for the committee.

4. Follow-up is necessary as a reminder. Use an informal individual reminder, follow up with a bulletin recapitulating decisions of the Committee periodically.

5. Decisions are sometimes simply shelved. Occasionally when recommendations are made by committees, everybody seems to be in agreement with them but somehow they don't gel and are not carried out. Usually such recommendations are impractical or too difficult to put into effect or actually not really favored even by some of those who have approved them. The latter is an interesting phenomenon that is often noted among committee members. It amounts to nothing more than lip service.

6. Consultants cause difficulties at times in requesting drugs not stocked by the pharmacy. Staff doctors are often reluctant to discuss the matter of the choice of drugs with them on the spot. The surest way to meet this problem is to make certain that consultants have available to them a list of committee approved drugs and that they are familiar with the hospital formulary system. It may be necessary to talk to each consultant individually about your formulary. The chances are that he will like the system and that he will offer suggestions for improvement.

7. The use of samples and unauthorized drugs in the hospital for the treatment of patients is a problem. Most Pharmacy and Therapeutics Committees adopt regulations to cover these matters, however the practice continues. Most Chiefs of Services prohibit these practices unless the drug is approved. It is only necessary to remind physicians that a request for the use of such drugs should be submitted to their Chief of Service and then forwarded to the Pharmacy with a prescription. The drug will be dispensed properly labeled if approved by the Chief of Service and the request will be included in the agenda of the next meeting.

8. Formulary maintenance is time-consuming and a difficult job. The major burden, that of writing monographs, usually falls upon the pharmacist with occasionally help from committee members. With new drugs placed on the market at a rapidly increasing rate, it becomes a herculean task to maintain a formulary current. *The American Hospital Formulary Service* with its periodic distribution of ready-made monographs will no doubt ease the burden of many a hospital pharmacist and do an expert job to boot.

9. The Pharmacy and Therapeutics Committee is an advisory committee. The pharmacist has charge of the Pharmacy and is responsible to the administrator for its operation. Some committees tend to overlook this well defined relationship. Tact is essential in handling such situations.

10. Periodically, perhaps only once a year, it becomes necessary to consolidate in one bulletin all committee recommendations that have been adopted and are still active. In this way, all recommendations are available in condensed form. This may be done to best advantage just before the new interns and residents arrive.

11. More frequently however, it may be necessary to summarize the status of all new drug requests. List them in four categories: approved, trial, rejected, and deleted. Serialize them and include the date when considered by the Committee, along with any other information in abbreviated form that may be useful for reference later. In some hospitals 3 x 5 cards have served very well for this purpose.

What Is Accomplished

You may have asked yourselves occasionally "What do we accomplish with our Pharmacy and Therapeutics Committee?" How does it improve medical care in our institution? Fundamentally, the Pharmacy and Therapeutics Committee has two broad functions. It insures a very high degree of therapeutic effectiveness through the drugs it approves, and it keeps to a minimum the drug expense necessary to maintain this level of therapeutic effectiveness. It is a means of assuring us that we obtain the most for each dollar expended in the purchase of drugs.

How do we do this? By systematic study and review every time a drug comes up for consideration. We study the literature and weigh the opinions of the experts; we make a choice and put the drug to trial. We approve or reject it in accordance with the results of our own clinical investigations. We do not arbitrarily reject any drug submitted for consideration, out of prejudice or caprice, but we do encourage the trial use of any drug when the consensus is that the drug has plausible possibilities. We encourage all physicians to submit requests for new drugs. Our final choice is made by a thoroughly reasoned process after clinical trial.

What does this do for us? First, the patient benefits most, for he is being assured of drugs that are proven effective. Second, the hospital benefits because only those drugs that are proven their worth are stocked. Through the efforts of the Pharmacy and Therapeutics Committee inventories are held within controllable limits and duplication is avoided. The Committee enhances a system of high selectivity in purchasing drugs. Lastly, the Pharmacy and Therapeutics Committee is an effective training tool pointed discriminately toward sound therapeutics and adhering very closely to the base lines of pharmacology. It keeps us on guard against the exaggerated claims of some pharmaceutical manufacturers.

HOSPITAL PHARMACY IN SPAIN

by R. SAN MARTIN-CASAMADA

► IT SHOULD BE POINTED OUT AT THE START THAT AT the present moment hospital pharmacies in Spain are not organized as professional units and that this kind of hospital service perfomed by the pharmacy is exclusively regulated by the rules, laws and regulations which make of pharmacy a technical profession, together with those regulations which appertain to hospital services in general.

Nevertheless, hospital pharmacy in Spain is increasing in scope and status with regard to its scientific and professional aspects. The hospital pharmacist practices his profession in a purely scientific spirit, this branch of the profession being the most strict and disinterested within pharmacy.

That is why pharmacists in Spain are trying to organize themselves professionally as it has already been done in several other countries. In Spain, as in other countries, the need is felt for establishing all kind of contacts with national and foreign colleagues, especially with those of countries where the profession is well organized. This is in order to lay the foundations for world-wide progress in hospital pharmacy which, in turn, will contribute effectively to the raising of the standard and prestige of pharmaceutical science as well as, within its limits, to the great health and therefore social tasks ahead.

Historical Background

It seems that the first known civil hospital in Spain was that of Mérida, founded by Bishop Mascona, which apparently "was well furnished with medicines"; from this can be deduced that in that epoch (Saint Isidoro's times) there already existed the "apothecary's shop" in the hospital, although at the time there were no rules or laws relating to pharmacy.

In the eleventh century a king of Navarre created a hospital in Roscenvalles which was also well provided with medicines. But, in fact, from the eleventh to the sixteenth centuries only some kind of medicine chests existed in hospitals. From the sixteenth century onward there begins to appear true data on hospital pharmacies. All of them belonged to the monastic orders in charge of the hospital themselves and always with a lay brother more or less conversant with chemistry responsible for it. According to Huidobro[2], the hospital of Roscenvalles had its own pharmacist in the eighteenth century who drew a considerable salary. It was in that century that there really came into existence the true civil hospitals, whether run by the monastic orders or not, and it is only then that the hospital pharmacy begins its proper existence, although in the majority of cases without a pharmacist. As we shall see in the section dedicated to legislation, it was not until very much later that it became compulsory to have a qualified pharmacist in charge of the pharmaceutical services in the hospital. The first legal disposition to that effect is that of 1860, but even before, in 1704, in the ordinances of Philip the Fifth "on the regulations for Field Hospitals and Ambulances" it is set down that "there should be an apothecary" in the staff of hospitals.

It can be said with some degree of certainty that there existed in Spain the following hospitals with pharmacies, with the dates between brackets: San Juan de Perpiñán (1116), Gerona (tenth century), Barcelona (restored by Ramón Berenguer in 1045), San Cugat del Vallés (tenth century), Monserrat (tenth century), Tarragona (1171), Poblet (1149), Zaragoza (tenth century), Estella (thirteenth century), Burgos (1479), Sahagún (1066), etc.

Legal Regulations

Independently from the historical data cited above, the first legal rule ratifying the functioning of pharmacies in hospitals and establishing at the same time the supervision or actual presence in them of the pharmacist, is to be found in the ordinances of pharmacy promulgated by Royal Decree of 18th April, 1860, which says in articles 27, 28 and 29:

Article 27.—"The apothecary's shop in the Royal Patrimony of the Royal Places and those of the Civil and Military Hospitals must be headed by a qualified pharmacist."

Article 28.—"Hospital pharmacies shall only attend to the requirements of the hospital itself. Nevertheless, pharmacies in military prisons shall continue to be open to the public."

Article 29.—"Pharmacies or medicine chests in lazarettos, spas far from towns, hospices, etc., shall be as far as possible supplied with medicines by a qualified pharmacist and the dispensing of the medicines shall be done by the pharmacist or a person with sufficient knowledge."

Later, the Royal Command of 11th May, 1903 establishes that "any hospital can have a pharmacy provided it only dispenses medicines for the internal service of the hospital and it is under the direct control of a qualified pharmacist."

In article 70 of the Law of General Health Instruc-

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tions (12th Jan. 1904) it is laid down that "the pharmacy in a hospital, asylum and other charitable institutions shall be under the direction of a qualified pharmacist, and shall only dispense medicines for the use of their own inmates." In article 71 it says: "Pharmacies in hospitals and clinics which because of their special circumstances cannot afford a qualified pharmacist must register with a pharmacy in the same town and be under the supervision of the Assistant Pharmaceutical Delegate of the district."

Nevertheless, the more modern Law on the Basis of Public Health promulgated in November, 1944, and still in force, has not completely regulated all matters referring to the pharmaceutical services. In general, on laying down that only a qualified pharmacist may be the proprietor of a pharmacy, it establishes as an exception the "pharmacies created by the hospitals of the State, Province or Town Council for the benefit of those admitted in them free of charge. . . "

Finally, the first paragraph of a legal enactment dated 24th April, 1945 says with reference to "clinical packages": "The dispensing of medicines to the general public as well as to sanatoria, health centres and other medical institutions which do not have a legally established pharmacy shall be exclusively done by pharmacies." And on the second it says: "Pharmacies in hospitals, sanatoria, lazarettos, etc., can only be established with the consent of the General Directorate of Health in accordance with what is set down about this matter in the Regulations in force." In the third it says: "In hospitals and clinics without an established pharmacy there shall only be allowed a first aid medicine chest under the supervision of a pharmacist."

Commentary on Legal Regulations

As a summary and commentary to all these legal dispositions we can say as follows:

1. The legal establishment of pharmacies and medicine chests in hospitals, clinics, etc., in Spain under the supervision of qualified pharmacists dates from 1860.

2. In the Law of 1860, referred to, it is laid down that hospitals shall only have a pharmacy for their own inpatients and not for outpatients, a prohibition that is being maintained at the present time. The sale of medicines to the general public is not allowed, as in other countries (Italy, England, etc.).

3. It is worth noticing also that the Spanish legislation has always been careful not to allow the dispensing of medicines in hospitals by other than qualified pharmacists, even if the establishment is not able to afford a pharmacy of its own or to employ a pharmacist, in which case the hospital registers with a pharmacist of the same town (Art. 71 of the Royal Decree of 12th, January, 1904). This circumstance is ratified in the above mentioned paragraph 3, order of 24th April, 1945, by virtue of which first aid medicine chests in hospitals without a proper pharmacy shall be under the supervision of a pharmacist.

What we have said about the legal aspects of the matter refers exclusively to the pharmaceutical services in civil hospitals. The legislation referring to military hospitals is different and older.

The Ordinances of Philip the Fifth on the "Regulations for Field Hospitals and Ambulances" directs that "among their personnel there must be a pharmacist."

Nature and Classification of Hospital Pharmacies

Actually, the only characteristic that may be used to classify the pharmacies in Spanish hospitals is the question of the administrative system to which they belong. In that respect, hospital pharmacies can be classified into the following four groups:

1. Pharmacies in State hospitals.
2. Pharmacies in Provincial hospitals.
3. Pharmacies in Municipal hospitals.
4. Pharmacies in Private hospitals.

The above classification does not mean that the pharmacies are of different standards. Pharmacies of the first order can be found in the four groups of hospitals, either due to the number of patients they attend to, or because of the special characteristics of some of the hospitals.

For instance, among the pharmacies in State-run hospitals those of the clinical hospitals of the Faculties of Medicine, with between 500 and 1000 beds, are of importance. They are used for teaching by the Faculty of Medicine at the same time as they serve their charitable purpose. We must also point out that the pharmacies in the clinical hospitals attached to the Faculties of Medicine in those universities where there is also a Faculty of Pharmacy are equally used for the teaching of pharmaceutical students, and the pharmacy is directed by the professor of Galenical Pharmacy of the Faculty.

Also important are the provincial hospitals run by the Council of the Province since the State has entrusted to these corporations the Health and Welfare of the province. Among these pharmacies the Pharmaceutical Service of the Provincial Council of Madrid should be particularly noted. It has a considerable number of experts and a Central Laboratory for Pharmaceutical Preparations, with control sections, etc.

As for the Municipal Hospitals, the pharmacies of those with some specific mission are of importance, as for instance the Hospital for Infectious Diseases of Barcelona, because of the special kind of assistance given by it.

Pharmacy Dispensing Area, Hospital For Infectious Diseases, Barcelona

We should mention the Casa de Salud de Valdecillas, Santander, within the private hospitals, not only for the number of beds in it (some 800) but also because of the number and importance of special illnesses treated there. The Hospital de la Santa Cruz de San Juan y San Pablo, of Barcelona, should also be noted.

On the other hand, the importance of a hospital's pharmacy depends in each particular case on the kind of pharmaceutical services it has to perform (clinical or bromatolcgical analysis, disinfection, blood banks, etc.,) which are not the same in all.

Selecting the Hospital Pharmacist

Formerly, the selection of the pharmacist for the hospital services was capricious and in the majority of cases the pharmacist was simply appointed by the administration.

Now it is done, for all classes of pharmacies in Spanish hospitals, whether run by the State, the Province, the Town Council or privately, after a very rigorous competitive examination, or by competitive contests, the most commonly used being the contest-examination, although there is no law enforcing any particular standard method for all the establishments. Nevertheless, where there is intervention of the State Health Service, the competitive examination is compulsory, as it is with physicians, male nurses, nurses, etc.

For the competitive contest, such advantages as academic or professional degrees, similar degrees (that of pharmacist is compulsory), research work carried out, prizes, services rendered, etc., are considered. An applicant with the degree of Doctor of Pharmacy, for instance, is considered before another applicant with only a Bachelor of Pharmacy degree.

Points are allotted for these merits and the applicant must obtain a certain number of them (generally an odd number) as an average of all the points given by the individual examiner. For instance, if there are five members in the tribunal and each examiner can grant from 0 to 10 points, the applicant shall be admitted to the examination only if he is given a total of 25 points.

The competitive examination always consists of practical exercises and written and oral questions (or

both) on the specialized themes listed in an official paper.

The practical exercises, which are almost always eliminatory, as a rule consist of three parts:

1. Spotting by sight of a certain number of drugs, pharmaceutical substances and products, together with an oral explanation of one of them chosen by the examiners.
2. Analysis of a medicine, some food-stuff or a clinical specimen.
3. Making up of one or several magistral or galenic formulae.

For the theoretical part of the examination, either written or oral, there are as a rule between 50 and 100 questions on general pharmaceutical points to be answered within a time limit.

Besides the possibility of being eliminatory, the practical and theoretical exercises are as a rule marked by the examiners with a system of points similar to the contest mentioned before, and the applicant with the greatest number of points is put forward as the successful candidate.

The examiners for these examinations to fill vacancies in civil hospitals are chosen from members of the Faculties of Pharmacy, from the Professional College of Pharmacists, from representatives of the National Health Service (Department of Pharmacy), from professionals in the same category as that of the vacancy (that is to say, from other civil hospital pharmacists) and sometimes, if it is possible, from representatives of the Faculty of Medicine or the Faculty of Pharmacy, together with representatives of the civil administration upon which the hospital depends, that is to say, either from the State, the Province, the Town Council or the private organization.

Status and Functions of the Hospital Pharmacist

The hospital pharmacist is considered in Spain as the director of the hospital pharmacy. Because he is the only person responsible professionally before the State and society, as well as before a civil or criminal court, the pharmacist becomes a Chief of Service. Therefore, it is becoming increasingly general to consider the pharmacist within the Faculty Service of the hospital as one more head of department and, as such, he has the same status as the other heads of department (clinic, laboratory, etc.). For that reason he is on the Board of Directors with the same functions, responsibility, voice and vote as the rest of the Faculty personnel.

It is of interest to note that the pharmacists, because of their significance and value as members of the Board of Directors, are being established gradually as advisors on therapeutics to the Board. Besides, the hospital pharmacist is always a member of any hospital commission appointed by hospital administrative organizations (formed by several hospitals with similar administrative rules) to compile the official order list of medicines of compulsory use by all the hospitals of the organization.

As a *Chief Pharmacist,* the hospital pharmacist is authorized to organize the service in accordance with the necessities of the hospital and to help him he has auxiliary experts on his staff. It is also customary in Spain to have nuns from the religious communities or orders that work in the hospital as part of the personnel in the pharmacy. The jurisdiction of the Chief Pharmacist extends to the student nurses or pharmacists who follow their studies at the hospital, as we shall see below.

The teaching aspect of a hospital's pharmacy is, in fact, a very interesting one in Spain as in other countries. It confers further responsibilities and importance to the hospital pharmacist.

In the present Spanish legislation dealing with the studies carried out and services performed by the Faculty of Pharmacy it is laid down that apart from the Professor of Galenic Pharmacy of the Faculty of Pharmacy being by right the head of the pharmacy in the Clinical Hospital of the Faculty of Medicine (in those universities where the two faculties exist), the Faculties of Pharmacy, in agreement with the hospitals in general, shall also be able to establish similar services with their students. For that reason, in those cases in which this agreement is reached, the task of the hospital pharmacist in his tutorial capacity acquires great importance. We should point out, besides, that although of a private character, that is to say, without any previous legal agreement between the Faculty of Pharmacy and the administration to which the hospital is attached, this service is being established almost automatically in the pharmacies directed by pharmacists who are also professors in the Faculty of Pharmacy. This fact also shows the necessary connection that should exist between the faculties and the hospitals. The tutorial mission of the hospital pharmacist embraces in Spain the teaching of nurses, laboratory and other personnel as well.

Instances of professors of the Faculty of Pharmacy working in civil, and sometimes, military hospitals are very frequent. We can mention as an example that out of the eight Chief Pharmacists of the hospitals in Barcelona, six are professors in the Faculty of Pharmacy (three chair holders and three adjunct professors). Although we do not possess the exact data, we can say that the case is similar in Madrid.

With regard to other functions of the hospital pharmacist, although not in all cases, the following can be mentioned:

1. *Preparation and dispensing of all medicines.* This is the chief task of the pharmacist and the only one that with a general character defines his mission.

2. *Direction of the Laboratory for Galenic preparations and control of all medicines.* This service is not very common in Spain, but because of its importance and because it also represents a great economy for the Administration, there is a marked tendency to establishing it by wealthy corporations, since it is considered a necessity. It also serves as a guarantee for the supply of certain medicines in a number of occasions, such as during epidemics and wars.

This professsional aspect of the pharmacist in a hospital demands certain technical knowledge which was unnecessary formerly and, therefore, requires a very special preparation and selection of pharmacists.

The most up-to-date and complete institution of this type in Spain is the Provincial Pharmaceutical Services of Madrid, which have a medicine laboratory, control, packing, etc., served and directed by pharmacists of the Corporation of Pharmacists of the Provincial Welfare of Madrid. In Barcelona there is also a smaller Municipal Pharmaceutical Centre, at present under development.

3. *As therapeutic advisor.* Only in some hospitals is this the case. In general, this task is carried out in Spain by a pharmacist with exceptionally high scientific qualifications when the size or importance of the hospital warrants it.

4. *Laboratories.* Due to their complexity we can consider the following:

a. Laboratories for clinical analysis. The intervention of the pharmacist in the clinical analysis in hospitals is not expressly laid down in any Spanish regulation and each hospital determines what that intervention shall be in each particular case. It can be said, however, that about 50 percent of the hospitals have entrusted that task to their pharmacist.

b. Toxicological laboratories. There are only some isolated ones in civil hospitals. Frequently this service is entrusted to a hospital if there is no other center in the town where it can be performed. They are often to be found in military hospitals and they are under the authority of the Military Tribunals.

c. Bromatological laboratories. Unless there are laboratories specially organized to that end, the judgment on bromatological matters is, in almost all cases, referred to the hospital's pharmacist by the heads of the clinics and by the administrative department in charge of the food supply of the hospital.

d. Special laboratories. Although there are no other special laboratories in hospitals, apart from

Pharmacy Control Laboratory, Hospital For Infectious Diseases, Barcelona

those already mentioned, the pharmacist frequently undertakes other kinds of services, such as pharmaceutical research, hygiene, and others.

5. *Teaching.* Although we have already pointed out the importance of that part of a pharmacist's work, we have particular interest in emphasizing it. Because of its consequences and, in so far as it contributes towards pharmaceutical studies with the corresponding benefit to a hospital's services, it should be worthwhile for all countries to consider this aspect of the hospital pharmacy, by reason of its marked scientific and professional interest, besides its inherent health and administrative importance.

Salaries

The salaries of hospital pharmacists in Spain are probably lower than in many other countries. The explanation is that in general all kinds of public servants in Spain receive low salaries.

The salary of a Chief Pharmacist in a hospital, which ever the category of the pharmacy (whether the hospital is run by the State, the Province, the Town Council or privately) ranges from 6 to 15 thousand pesetas per annum the amount not being determined either by the category of the pharmacy, (for we have seen that the standing of pharmacies in Spain is not dependent on category) or by the number of beds in the particular hospital. Auxiliary pharmacists have a salary ranging from 4 to 7 thousand pesetas per annum.

But together with their salaries, it is also customary in Spain for Civil Servants to receive perquisites, such as gratuities, annual increases etc., which are determined by the corporations or bodies to which the hospital belongs.

For comparison with the hospital pharmacist, the following are three examples of salaries of other public servants:

a. University professor, beginning at 33,000 pesetas.

b. Army Officer (First Lieutenant), beginning at 24,000 pesetas.

c. Cabinet minister, beginning at 92,000 pesetas.

Characteristic of Some Hospitals

We have already said that the pharmacies in Spanish hospitals are not classified according to the number of beds in the hospital and that it is only possible to differentiate between them by the administrative system to which they belong. Nevertheless, the category of the hospital, and consequently of its pharmacy, depends on several factors that can be evaluated, as for instance, the number of cases dealt with, the clinical, medical and surgical specialities of the hospital, etc. For which reason it is possible to find excellent hospital pharmacies within any of the groups already mentioned.

Thus, for example, the State has clinical hospitals of the Faculties of Medicine, those of Madrid and Barcelona being notable among them. In these hospitals are performed all kinds of services relating to medical and surgical clinics as well as the specialities. Also run by the State are some specialized hospitals as, for instance, the King's Hospital for Infectious Diseases, in Madrid.

Almost every provincial council has its own General Provincial Hospital, in a way similar to clinic hospitals. As an exception, the province of Barcelona has no Provincial Hospital at the moment but they use and subsidize the Clinic Hospital of the Faculty of Medicine.

Some cities also have their own Municipal Hospitals. Barcelona, for example, has at present three hospitals which in order of importance are: The Nuestra Señora del Mar Hospital for Infectious Diseases, the Esperanza Hospital, with several specialities, and the Neurological Hospital.

Among the privately organized hospitals there are also in Spain some model ones, specially two of them, with all kinds of services, more than 800 beds each and modern installations: The Casa de Salud, de Valdecillas (Santander) and the Hospital de la Santa Cruz y San Pablo, Barcelona, both with first class doctors and excellent pharmacies.

Approximate Statistics of Hospital Services

It is possible to deduce the size of the hospital pharmacies in Spain from the approximate number of beds in the hospitals; although our figures are incomplete they are sufficient to obtain an idea about the capacity of the pharmacies.

Those figures are:

State run hospitals	*Beds*
Clinic hospitals	10,000
Other hospitals	10,000
Provincial hospitals	30,000
Municipal hospitals	2,000
Private hospitals	5,500
Total	57,500

From these general figures, we can quote some particular ones. For instance: Clinic Hospital of the Faculty of Medicine of Barcelona has 1000 beds. Clinic Hospital of the Faculty of Medicine includes 3000 beds. The National Hospital for Chest Diseases, in Barcelona Province, will have 3000 beds when completed. Municipal Hospital for Infectious Dis-

eases, Barcelona, has some 500 beds, Casa de Salud de Valdecillas Hospital (Santander), has approximately 800 beds.

Pharmacy in Military Hospitals

In Spain, the administrative organization of military hospitals differs considerably from that of civil hospitals. Although there is a number of military hospitals in the country, the number of beds is naturally small since their mission is to attend only the military garrison where there is one.

They are situated in the different military regions of the country, the heads of their pharmacies are chief pharmacists, either Majors or Captains, according to the military importance of the hospital, and they have, besides, one or several officers of the Military Pharmaceutical Corps.

The number and size of the Spanish military hospitals are as follows: The number of hospitals is 57 and the approximate number of beds is 19,000.

Of the 57 hospitals, those with 1000 or more beds are: the Military Hospital of Carabanchel (Madrid), with 1697, and the Military Hospital of Barcelona, with 1000. Some 10 hospitals of the rest have less than 100 beds and there are the very small ones, such as the Military Hospital of Toledo with 20 beds, of Murcia with 40 beds and Cáceres with 50 beds.

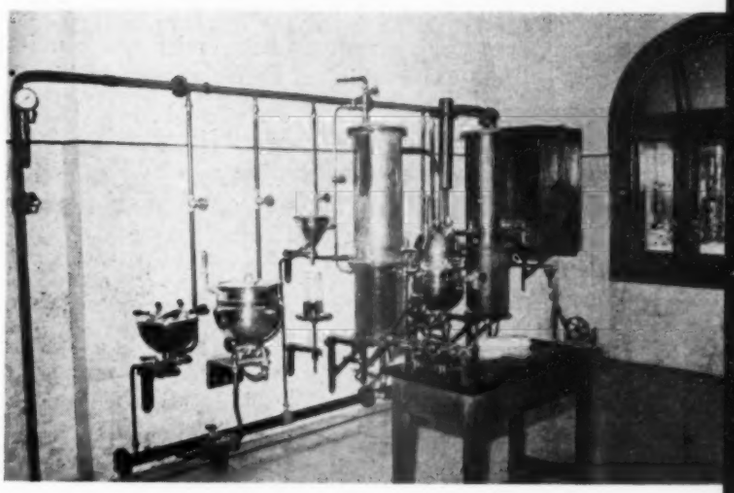
In the well organized and equipped pharmacies of the military hospitals of Madrid and Barcelona there are laboratories for analysis, preparation and testing of certain medicines, besides other functions that sometimes are performed by the hospital's pharmacist at the request of the Military Authorities of the jurisdiction to which the hospital belongs, such as toxicological judgments, disinfections, analysis of foodstuffs, etc.

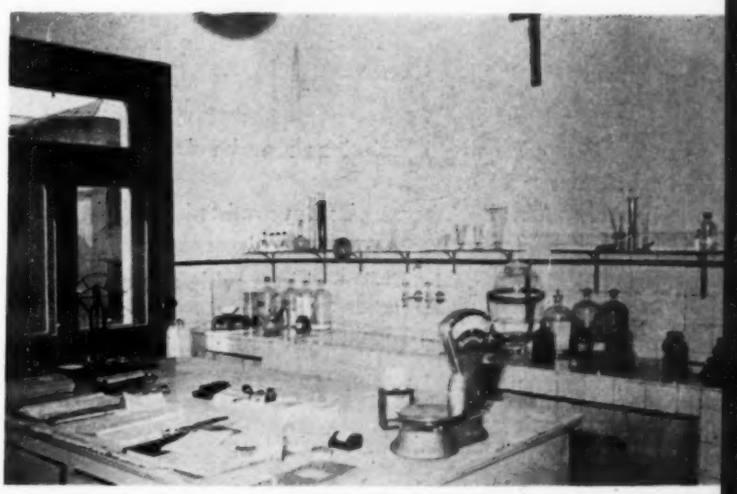
Hospital Pharmacies in Barcelona

Since Barcelona is the most important city after Madrid with regard to its pharmaceutical service in hospitals and since it is also the center best known to me, it seems of interest to complete this paper with the data and characteristics of the pharmaceutical services in this city.

Hospital pharmacy service in Barcelona functions in seven hospitals with seven chief pharmacists and nearly the same number of assistant pharmacists. In nearly all of these pharmacies some medicines are prepared (injections, tablets, etc.), in addition to all kinds of prescriptions. Special medicinals are prepared for the x-ray department. Germicidal solutions are prepared. The control and analysis of medicines and chemical products are carried out. Finally, some hospital pharmacies carry out clinical analyses, although this service is generally entrusted to the Analytical Laboratories of the hospital.

Views of Pharmacy of the Casa de Salud, Valdecilla, Santander. Top photo shows partial view of second dispensing room; center photo shows manufacturing room; and bottom scene is the compounding room





There are in Barcelona the following hospitals with pharmaceutical service. These hospitals may be divided into four categories of state, provincial, municipal, and private.

State Hospitals.

The Clinic Hospital of the Faculty of Medicine has 800 beds. This hospital treats all kinds of medical and surgical cases. Its pharmaceutical staff consists of a chief pharmacist, an auxiliary pharmacist, and nuns. In addition to the chief pharmacist, the Professor of Galenic Pharmacy of the Faculty of Barcelona lectures to students in the pharmacy of the hospital.

Provincial Hospitals.

Casa Provincial de Caridad Hospital is a charitable institution which does not take the place of the provincial hospital. There is no provincial hospital in Barcelona. This is a general medical and surgical hospital with 50 beds. It has a chief pharmacist, an auxiliary pharmacist and nuns.

Municipal Hospitals.

Municipal Hospital for Infectious Diseases (Santa Maria del Mar) has 500 beds and several clinics for infectious diseases and annex pharmacies for ophthalmology, dermatology, and ear, nose and throat conditions. There is a chief pharmacist, an auxiliary pharmacist, and nuns.

Nuestra Señora de la Esperanza Hospital is a 200 bed institution for rheumatic diseases, cardiology and heart surgery. Its pharmaceutical staff consists of a chief pharmacist and an auxiliary pharmacist.

Municipal Neurologic Institute is for diagnosis, therapy, surgery and physiotherapy and has 125 beds. It has a chief pharmacist.

Private Hospitals.

Santa Cruz y San Pablo Hospital has medical and surgical services and specialized clinics. It has 1400 beds and has a chief pharmacist, an auxiliary pharmacist and nuns.

The Red Cross Hospital of Barcelona does not have an organized pharmaceutical service at present.

Conclusions

The following conclusions may be drawn from the above:

1. Hospital pharmacies have existed in Spain since the tenth century.

2. The first legal dispositions with regard to hospital pharmacies date from 1860.

3. The services performed by a hospital pharmacy have been limited to the patients of the hospital since 1903 and in 1904 it was declared compulsory by law to have a qualified pharmacist as head of the hospital pharmacy.

4. Spanish hospitals are not classified in categories, but are grouped according to the administrative system to which they belong.

5. The method of selection of a pharmacist as the chief pharmacist in a hospital in Spain affords the maximum guarantee of efficiency and responsibility.

6. The chief pharmacist in a hospital, as head of a technical service, has great responsibilities and enjoys the same prerogatives as the other heads of departments.

7. In spite of the special kind of mission entrusted to the hospital pharmacist, there is in Spain no special course for them. This differs from the practice in some other countries, although the very comprehensive studies followed by the Spanish Faculty of Pharmacy guarantees a sound scientific foundation for the qualified pharmacist. Nevertheless, we would consider it of great interest if a special diploma for the hospital pharmacist should be instituted in all countries.

8. The scientific and professional efforts of the hospital pharmacist and his altruistic and disinterested work for the benefit of humanity and science are not adequately compensated economically.

9. The number of pharmaceutical personnel attending to the requirements of the hospital population in Spain is not very high because there are not as many hospitals in the country as there should be (less than 60,000 beds).

10. Madrid and Barcelona have first class pharmaceutical services in their hospitals not only by reason of the very high number of patients in them but also because of the good organization of the service and the high standing of most of the pharmacists working in them.

11. The very important fact of the connection between the teaching personnel of the Faculty of Pharmacy and the hospital pharmacist has been emphasized. In the majority of cases, where the Faculty of Pharmacy is located in the same city, these positions are held by the same individual, in Spain, as in France and some other countries.

In conclusion may I say that the scientific activity of the pharmaceutical personnel in Spanish hospitals, as reflected in the scientific publications, is a guarantee of the survival of hospital pharmacy, of its profitable relationship with the personnel of scientific progressively countries, and of the spirit of sacrifice and brotherhood made patent in the First International Congress of Hospital Pharmacists which was held in Basle in 1953 and carried forward successfully in the Section of Hospital Pharmacists of the Fédération Internationale Pharmaceutique.

References

1. Luis Blas. *Academia de Farmacia,* Madrid, 1951.
2. Huidobro. "Las Peregrinaciones Jacobeas," Instituto de Espana, 1950.

Relations Between a Pharmaceutical Organization and the Director Responsible for Its Official Organ

by W. K. Fitch

► IN ACCEPTING THE INVITATION TO SPEAK to you on this subject it occurred to me that all I need say was that the relations between the director and the organization should be cordial. But as it was obvious that I could not leave the subject there, that something more was required, I have considered the subject from various angles, including, naturally, my own position as editor of the official organ of the Pharmaceutical Society of Great Britain for 24 years (1933-1957) and publications manager of the Society since 1944. And I came to the conclusion that, at any rate as an introduction to this paper I might run briefly over the history of *The Pharmaceutical Journal*, for I believe that it does not differ greatly from the history of most official organs of pharmaceutical societies throughout the world.

The Journal was founded in 1841, a year before the first operation was performed under a general anaesthetic, 19 years before Pasteur demonstrated the presence of bacteria in air, and 26 years before Lister introduced antisepsis into surgery. I would like to obtain a complete list of official organs of pharmaceutical associations and societies, when they were founded and whether they are still in existence under their original name or under another title, but existing information is rather vague.

W. K. Fitch, formerly Editor of *The Pharmaceutical Journal* of the Pharmaceutical Society of Great Britain, is now Publications Manager of the Society.

It is probable, however, that some of these periodicals, like *The Pharmaceutical Journal* were originally private ventures. Jacob Bell, the original proprietor of *The Pharmaceutical Journal* was the first editor, was a founder member of the Pharmaceutical Society, a member of its council, its president for three years, and a member of the British Parliament. In the first issue of *The Journal* he described its function as a medium for the publication of scientific papers read to meetings of the Pharmaceutical Society; it was "an experiment for the primary purpose of illustrating the advantage of scientific discussion." When he died in 1859 he left the copyright of *The Journal* to the Society, but in doing so he laid down certain rules of conduct:

> "It is particularly important [he wrote] that *The Journal* should not fall into the hands of any person who might make it a matter of business from personal interest to throw over the Society. Three departments must be represented: Chemical and pharmaceutical, materia medica and botany, the shop.
>
> "One danger to be apprehended is that some scientific men, especially those who have risen from the counter, are apt to despise the 'shop' and would make *The Journal* unfit for the class for whom it was specially intended. A high-flown scientific journal would be of little use to apprentices and students.
>
> "The responsibility connected with *The Journal* is of two kinds. First—Pecuniary and general responsibility which rests on the three honorary members of the Committee, and relates to the settlement of accounts, and the maintenance of the general character of *The Journal,* and secondly—Scientific responsibility, which rests on the three Editors, each of whom is responsible in his own department."

Fundamentally, *The Journal* has not departed from these conditions and succeeding editors have faithfully endeavored to uphold the high standards laid down by its founder. During those eighteen years *The Journal*, under Bell, was able to express the views of its editor without fear or favor—there was no committee or council to which he was responsible for what he wrote. It was a virile journal with a virile editor, but there is no evidence that Jacob Bell ever tried to put forward personal or sectarian views, or views at variance with those of the majority of his colleagues on the Society's Council.

Editorial Fire

I therefore come to my first point: If the editor of an official organ has a fire in his belly, and if it is the right kind of fire, there is no need for the governing body of his society to impose conditions on his editorship of its official organ. Jacob Bell had such a fire and its heat is still a potent factor in the weekly synthesis of the paper.

When Bell died and the Society accepted responsibility for the production of *The Journal* it was faced with the quandary of finding an editor. For eleven years it searched in vain and during that period *The Pharmaceutical Journal* was edited by a triumvirate of experts—a botanist, and a pharmaceutical chemist, both professors in the Society's School of Pharmacy, with a business man as a guide in matters affecting the trading side of pharmacy. This arrangement came to an end in 1870, but during that time the standard of *The Journal* tended to decline.

Unified Direction

Which brings me to my second point. The fundamental rules which govern the direction of a national newspaper are equally applicable to the efficient editing of the official organ of a scientific society. A gaggle* of editors can neither be efficient nor effective. Three men cannot edit a journal any more than three men can drive an automobile. A single interpreter of the organization's policy is an essential factor in the successful conduct of its official organ.

This state of affairs was changed by the appointment of Benjamin Horatio Paul, formerly a student of Justus Liebig, and at the time of his appointment an assistant to the master of the Royal Mint where coins for the United Kingdom and abroad are struck. Paul was a keen research worker who had already made a name for himself in the study of cinchona; he was a contributor to many international gatherings of pharmacists, a pontifical character, and a writer of good English. But he was not a good mixer; indeed, it is said that for almost the whole of his reign of 32 years he and the secretary of the Society were not on speaking terms. Although during that period it failed to some extent to reflect fully the views of the governing body of the Society, the technical standard of *The Journal* was very high.

Consultation

And so my third point emerges: It is essential for the efficient direction of the official organ of a society that there should be frequent consultation, with the closest alignment of thought and agreement on future action, between the chief executive officer of the society and the editor. The secretary of the society is responsible for its efficient administration and the editor of its official organ is responsible for conveying the views of the governing body to its members. A difference of opinion between these officers spells disaster to the paper. When Paul retired in 1902 his

*A "gaggle" is a collective noun which is used to designate a number of geese. In the context almost any collective noun would be just as suitable.

chief assistant was appointed editor, and, in general terms, the principles set out above have since been maintained.

But this is not the completion of the story. What, for example, should be the attitude of the organization to the acceptance of an advertisement the text of which is at variance with the policy of the society. Should the same standard of accuracy and integrity apply to the advertisement columns as apply to the editorial columns? And on whom should the responsibility devolve? Where there is single interest in both parts of the periodical it is obvious that a single standard can easily be maintained. Where someone other than the editor is responsible for the advertisement pages, it is necessary for him to be as closely in touch with the overall policy of the organization as is the editor. It is reasonable to suggest that an official journal which has different standards for its editorial and advertising pages presents to the community such a complex pattern that its rôle as an effective medium for the promulgation of pharmaceutical ideas and ideals is largely nullified. And as I study the claims made in advertisements in some official organs of pharmaceutical societies I feel that here is something which should engage the serious attention of directors, editors, and management committees.

A Single Entity

And so to my fourth point: The official organ of a scientific organization is judged by its members and by the outside world as a single entity; scientific accuracy, and the sacredness of facts are of fundamental importance in both its editorial and advertisement columns.

Now a word about the administrative machinery which does (or should) operate the production of the official organ of a pharmaceutical society. Here again I can refer to our own arrangements, which, I imagine, resemble closely those of other societies. Responsibility for administering the Society's affairs rests primarily on a council of 24 members who meet monthly. Topical questions and matters of long-term policy are first considered by standing committees, of which there are eight. One of these is the Publications Committee. Subjects for discussion can be placed on the agenda of this Committee by the chairman, by the secretary of the Society, by the editor, or by the publisher, all of whom are present at meetings of the Committee. The Committee's decisions are then reported to the Council where they are either ratified, or, in rare cases, the subject is referred back to the Committee for further consideration. If it should happen (and I cannot recall such an occurrence with our own Society) that the views of an official (secretary, editor, or publisher) differ materially from those of the committee, he can ask that his views be communicated to the Council and, if he believes the issue to be of major importance, he can make it clear to the Council that in the event of their declining to accept his point of view he would have no alternative but to resign.

Political Exigencies vs. Editorial Conscience

My fifth point, therefore, is to emphasize that the governing body of a pharmaceutical organization should understand that the editorial conscience on the one hand, and political exigencies on the other hand may not always be in agreement; and that the opinions of an editor, who has the responsibility of transmitting the views of the governing body to its members, and who is necessarily in close touch with pharmaceutical opinion, should be given full consideration.

It would be wrong to conclude without referring to a most invigorating editorial which appeared in the *American Journal of Pharmaceutical Education* for the autumn of 1957. Based in part on a paper read by the editor (Melvin R. Gibson) to the last Pan-American Congress, it deals in the main with the responsibility of an editor of any pharmaceutical periodical to his readers—not to advertisers or to non-pharmaceutical subscribers. Dr. Gibson declares, quite rightly in my opinion, that an editor should "seek out the problems of the day, focus attention on them, speak frankly, and bend every effort within his sphere of influence to improve the profession and [have] as his whole guide the single allegiance to his conscience and his principles" . . . he must "set the reader to constructive thought rather than simple reflection" . . . an editor "should be known for what he fights for and what he fights against." "Pharmacy journals must be food for professional growth, not weeds for professional narcosis."

It seems to me that this is the kind of directive which should be given by an organization to the editor of its official periodical. There is no need these days for an editor to keep a revolver on his desk, as editors in some of the Western and Southern U.S.A. states did in the nineteenth century, but, undoubtedly, he should be able and ready to fight for the principles which guide the activities of the official organization.

In the appointment of the editor (or director) of the official organ of a pharmaceutical organization it is essential to appoint a pharmacist. It follows that such an appointment ensures that the journal is directed by someone who belongs to a calling with deep and wide scientific traditions. One of these traditions is loyalty—loyalty to the profession and to the organization. In such circumstances there is no need to enforce a strict code of conduct as between the organization and the director responsible for its official publication.

practical usage of
PRESCRIPTION FOLDER

by CHARLES J. KELLER

► A FEW YEARS AGO, A NEW method of ordering, issuing, and charging drugs was suggested by Godley[1]. This valuable presentation describes a prescription folder which includes space for important information concerning the patient's admission history, such as name, age, admission number, admission date, marital status, sex, service, admission diagnosis, physician, room number, home address, and date of previous admission. In addition to the routine drug orders, a space is allotted for interim bills, usage of emergency cupboard drugs, homegoing prescription charges and for ordering of large volume parenteral solutions.

The purpose of this article is to indicate the modifications which were devised to provide increased control of medications on the nursing unit during the year since converting to the Prescription Folder System.

Inherent Advantages

The hospital pharmacist, by virtue of his educational background, should control drug usage of the individual patient by carefully evaluating each drug order for dosage and quantity dispensed to the patient. The Prescription Folder System to a large extent enables the pharmacist to carry out this activity. In addition, availability of the cost of medication to the house staff and nurses stimulates economy relative to usage and necessity of ordering expensive drugs. Knowledge of refills and correlated drug orders enables the pharmacist to gain an insight to the current drug therapy for a host of clinical conditions.

Upon discharge of the patient, a composite of medications used during confinement is readily available and filed in the Business Office for future reference. Credits and charged floor stock items are clearly indicated.

Modifications Employed

This method of ordering, issuing and charging drugs may be limited to the departmental activities and still perform an important function of drug control. Here at Hackensack Hospital the Prescription Folder consists principally of an area for individualized medications on one side, a sufficient space for entering floor stock drugs, and an antibiotic floor stock section on the other side. Beneath these areas lies a blank area for posting purposes by the Business Office. We term our modification of the Prescription Folder System the Single Drug Requisition and Charge Folder.

General Enforcement

The following rules and directions for use of the Single Drug Requisition and Charge Folder were sent to the nursing units upon conversion to this system.

1. Addressograph should be stamped on upper right hand portion of Folder which will indicate patient's name, admission number, etc. This must be stamped at time of patient's arrival to the floor when chart is assembled.

2. Card number should be circled. If more than one card is used during an accounting period each card should be circled to indicate first, second, or third card during that accounting period. Indicate card number on face page of Folder in the lower center space. A reminder slip will be sent to the nursing unit upon completion of a period or if the card is full.

Directions for Ordering New Medication

1. For each Drug Requisition use a separate entry space. There is enough space to make twelve new orders on each Folder.

2. Enter date in first column.

3. Check whether medication is oral, local, or by injection.

4 Enter name of medication and dosage schedule, *i.e.,* Dramamine Tabs. 50 mg. T.I.D.

5. Initials of nurse ordering medication must be entered under column titled "R.N.".

6. Columns marked "Amt.", "Charge", "Crd." and "Net Charge" are *not* to be filled in by the nurse. These spaces are for Pharmacy and Business Office use.

CHARLES J. KELLER was formerly Chief of Pharmacy Service, Hackensack Hospital, Hackensack, N. J.

7. Drug Requisition and Charge Folder must be sent to the Pharmacy by courier service or drug baskets. Only in cases of *stat* orders should Folders be brought to the Pharmacy by the nurse.

Directions for Medication to be Credited

1. If medication has been ordered on current Drug Folder simply circle the order in *red ink* and return the medication to be credited to the Pharmacy along with the Charge Folder.

2. If medication has been ordered on an older Folder which has already been sent to the Pharmacy or Business Office then, enter the name of medication to be credited in *red ink* on an order space of the current Drug Charge Folder.

Directions for Entering Charged Floor Stock

1. Enter date and route of administration.

2. Indicate name of medication and total quantity administered per day. In some instances it may be convenient to enter total amount administered where the physician has stated "give drug X, 125 mg. B.I.D. for two days" etc. In the latter instance indicate that the dosage schedule will be administered for a specified length of time.

3. If medication to be charged is discontinued after the Pharmacy has made the charge adjustment then, enter the amount of charged floor stock which has not been administered (but already charged) on a new space under *Charged Floor Stock* in *red ink*. The

Two views of medicine cabinet on the nursing units, showing the numbered drug storage units with prescription folders below

HACKENSACK HOSPITAL PHARMACY

DRUG REQUISITION AND CHARGE FOLDER

Serial No. 19099

Date		Route of Adm.	Name of Drug	Dosage schedule	R.N.	Amt.	Charge	Crd.	Net charge
8/1	1	(Oral) Local Inj.	Chloromycetin	T. q.i.d.	JD	20	3.10		3.10
8/1	2	(Oral) Local Inj.	Diuril	0.5 gm b.i.d.	JD	8	1.30		1.30
8/2	3	(Oral) Local Inj.	Diamox	250 mgm b.i.d.	JD	12	1.90		1.90
8/3	4	(Oral) Local Inj.	Digoxin	0.25 mgm q.d.	JD	6	.40		.40
8/3	5	Oral (Local) Inj.	Aminophyllin Supp.	7½ gr. q.d.	JD	6	1.20		1.20
8/4	6	Oral Local (Inj.)	Aminophyllin	7½ gr. stat	JD	1	.50		.50
8/4	7	Oral Local (Inj.)	Mercuhydrin	2 cc. q.d.	JD	10cc	2.50		2.50
8/4	8	Oral Local (Inj.)	Aminophyllin I.V.		JD	20cc	.60		.60
8/6	9	(Oral) Local Inj.	Diamox	250 mgm b.i.d.	JD	12	1.90	1.90	—
8/6	10	(Oral) Local Inj.	Diuril	0.5 gm b.i.d.	JD	8	1.30	.15	1.15
8/8	11	(Oral) Local Inj.	Digoxin	0.25 mgm b.i.d.	JD	8	.50	.15	.35
	12	Oral Local Inj.							

Send this folder to Pharmacy when patient is discharged along with medications to be credited. Discharge Date 8/16

Card number 1 2 3 4 5 6

Total net charge	
Charged floor stock	
Floor stock Antibiotics	8.00
Total drug chg(s)	

Pharmacy will then make the necessary correction in the patient's charge.

Directions for Penicillin and Streptomycin Charges

1. Enter date.

2. Enter total antibiotic administered *per day* under appropriate column. Enter such totals in "cc(s)", units or grams whichever is convenient.

Instructions for Ordering Charged Floor Stock

1. Charged floor stock must be ordered on the *Standard Floor Stock Requisition Form* under the section titled "Special Departmental Orders." Charged floor stock must be ordered on basket day unless unusual circumstances require *stat* use. In the latter case, nurses may send the Floor Stock Requisition Form to the Pharmacy and obtain sufficient materials to replenish their charged floor stock supply.

Obtaining Drugs When Pharmacy Services Not Available

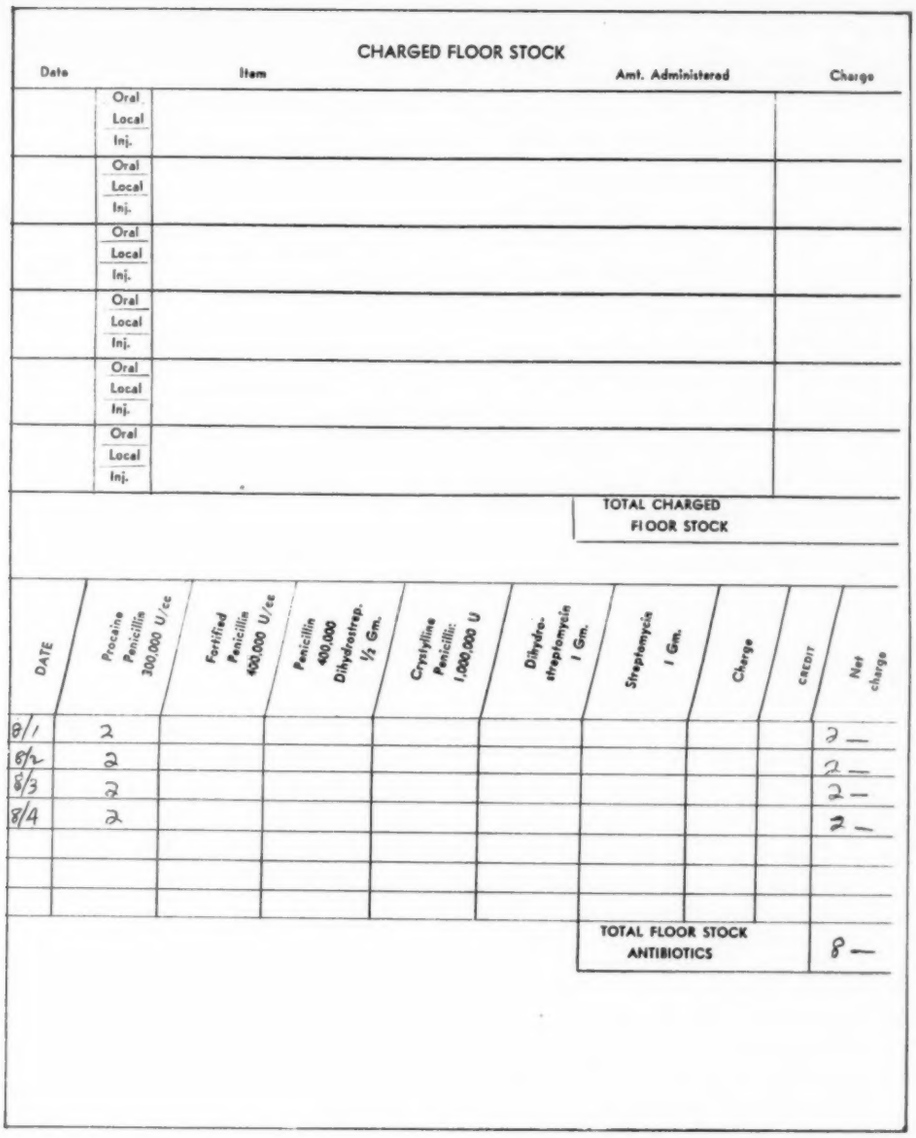
1. Drug should be ordered on the floor by filling in the Drug Requisition and Charge Folder in the prescribed manner.

2. Nursing Service Office Supervisor must be notified and will obtain medication for the floor.

3. Upon receipt of the Charge Folder the N.S.O. Supervisor will enter the amount of medication obtained in column headed "Amt."

4. The N.S.O. Supervisor will also indicate that the order was filled by her department by marking the Order Folder with the letters "NSO" and then initialling the order along with the initials of nurse ordering medications.

5. The above information is recorded in the Night Log Book located in the Pharmacy, indicating the time the medication was dispensed.



CHARGED FLOOR STOCK

Date		Item	Amt. Administered	Charge
	Oral / Local / Inj.			
	Oral / Local / Inj.			
	Oral / Local / Inj.			
	Oral / Local / Inj.			
	Oral / Local / Inj.			
	Oral / Local / Inj.			
			TOTAL CHARGED FLOOR STOCK	

DATE	Procaine Penicillin 300,000 U/cc	Fortified Penicillin 400,000 U/cc	Penicillin 400,000 Dihydrostrep. ½ Gm.	Crystylline Penicillin 1,000,000 U	Dihydro-streptomycin 1 Gm.	Streptomycin 1 Gm.	Charge	CREDIT	Net charge
8/1	2								2 —
8/2	2								2 —
8/3	2								2 —
8/4	2								2 —
						TOTAL FLOOR STOCK ANTIBIOTICS			8 —

Instructions for Operating Room and Post-Anesthesia Room Use

1. Charge Folder must be inserted in patient's chart before patient is sent to Operating Room or Post-Anesthesia Room.

2. Any medication received in these departments *i.e.,* Operating Room and Post-Anesthesia Room, must be entered under "Charged Floor Stock" section of the Charge Folder. These entries must be marked "OR" or "PAR" to indicate where medication has been administered.

Instructions for Patient's Discharge

1. All medication to be credited must be entered as per section four of this notice, "Directions For Medication To Be Credited."

2. Discharge date must be entered in lower left hand corner on face page of Folder *i.e.,* on area marked "Send this Folder to Pharmacy when patient is discharged etc. . ."

3. In all instances the Drug Requisition and Charge Folder must be sent to the Pharmacy the same day patient is discharged (along with any medications to be credited.)

Conclusion

Careful consideration to the usage of this system is recommended in improving the conventional manner of posting charges and the irrational methods of handling credits.

The Business Office has eliminated countless hours of posting individual drug orders and credits as well as the previous problem of crediting a greater amount than was originally charged to the patient.

1. Godley, L. F.: Rx Folders . . . A New Method of Ordering, Issuing, Charging Drugs. *Hospital Management 79*:4 (Apr.) 1955.

Therapeutic Trends

edited by WILLIAM JOHNSON

SKF d-5137, A Synthetic Analgesic

SKF 5137 is a substituted diphenylpropyl amine developed in Belgium. Later, the dextro-isomer was discovered to possess twice the potency of the racemic mixture, d-1 (3 methyl-4-morpholino-2,2 diphenyl butryl) pyrrolidine. This new synthetic narcotic, as described by Lear *et al.* in *Anesth. Analg. 37*:295 (Sept.-Oct.) 1958, was evaluated in a pilot series of 307 patients with Demerol as the reference drug. This compound, accordingly, was studied as a premedicant, as a supplemental agent during surgical procedures, and finally as an analgesic in the postoperative patient. When used in premedication, SKF d-5137 was lacking in sedative property and needed to be supplemented. It was found to be useful in obtaining traction reflexes under spinal anesthesia. The drug is an effective analgesic supplement to nitrous oxide anesthesia and does not require potentialization with cyclopropane. Succinylcholine requirements during abdominal operations were not as large as with nitrous oxide-Demerol anesthesia. Patients were awake at the end of surgical procedures, thereby facilitating their nursing care. Relief from postoperative pain was shorter and hypotension of significance occurred half as frequently with SKF d-5137 as compared with equivalent doses of meperidine. SKF d-5137 may be given intramuscularly or intravenously and dosages range from 0.5 mg. to 6 mg. It has about 20 times the analgesic effect as Demerol. SKF d-5137 is four times as toxic as Demerol but has a more favorable therapeutic index. SKF d-5137 was supplied as Dimorlin by Smith, Kline and French Laboratories.

SYLVIA SCHMIDT

PA-128

PA-128, a crystalline antibiotic from the Pfizer Therapeutic Institute, is reported in *Antibiot. Chemother. 7*:437 (Sept.) 1958 by Rao and Lynch. PA-128 has been isolated from the culture filtrates and mycelia of an unidentified species of *Streptomyces,* grown submerged in a medium composed of cerelose, soybean meal, and NZ-amine B. This antibiotic exhibited unusually selective and rather high activity against the protozoan species *Trichomonas vaginalis* and *E. histolytica* but not significant activity against gram-positive or gram-negative bacteria. It is evident that the antibiotic is toxic to mice. Below the toxic range, no protective action is noted. PA-128 was toxic when administered *per os* to weanling rats infected with experimental amebiasis. Even though PA-128 is toxic and offers no protection *in vivo,* its activity *in vitro* is so unique and specialized that it would appear to be a useful tool in studying the metabolism of certain protozoan species.

WILLARD E. HERSHBERGER

Streptovaracin

Streptovaracin is isolated from fermentation beers as a yellow-orange material consisting of a number of very similar antibiotic compounds, five of which have been individually isolated and designated as streptovaracins A, B, C, D, and E. Streptovaracin C demonstrates the highest activity followed by streptovaracin B. The other compounds are either inactive, or represent such a small percentage of the fermentation products that they have not been investigated further. This report in *J. Pharmacol. Exptl. Therap. 124*:16 (Sept.) 1958 by Donald P. Wallach and John G. Wagner deals with a partially purified preparation which contained 60 percent streptovaracin C, 10 percent streptovaracin B, and 30 percent inert material. Streptovaracin has been shown to be well-absorbed from all parts of the digestive tract of dogs with the possible exception of the stomach. Following intravenous administration antibiotic activity disappears from the blood at a considerably faster rate than thiopental. Tissue levels also decline at a very rapid rate. The antibiotic is not excreted to a significant degree in the urine and bile, nor is it stored in tissues to an appreciable degree. The trade name applied to streptovaracin by the Upjohn Co. is Dalacin.

WILLARD E. HERSHBERGER

TP-21—A Phenothiazine

Two trends seem to be appearing in the development of the phenothiazines. One is to produce agents of greater potency by weight. This is, however, also accompanied by an increased incidence of extrapyramidal tract symptoms. The second trend is to produce compounds approximately equipotent to the parent compound. TP-21 falls into this classification. The drug, TP-21, was supplied by Sandoz as Mellaril. A study

by Cohen as reported in *Am. J. Psychiatry 115*:358 (Oct.) 1958 includes 29 patients. The treatment lasted from 3 to 92 days with a mean of 41 days. The dosage ranged from 100 to 400 mg. daily. Some of the conditions treated were acute brain syndrome with alcoholism, schizophrenia reaction, and psychotic depression. Side effects of dizziness and sleepiness were removed by a reduction of the dosage. The new drug, TP-21, appears to be a potent agent in the symptomatic management of psychiatric states. It is singularly free from the side effects ordinarily seen with these compounds.

RICHARD H. HARRISON

Imipramine, A New Antidepressant

A study of this new drug was done by Azima and Vispo and the results were reported in the *Amer. J. Psychiatry 115*:245 (Sept.) 1958. Imipramine was supplied by Geigy as Toframil. Sixty-three patients were treated in the study and if no response was noted in three weeks the treatment was discontinued. A criterion of improvement was established as a standard: (1) disappearance of symptoms; (2) ward management; (3) ability to go home; and (4) ability to go to work. The realization of four, three, or two of these was classified as marked, moderate or slight improvement, respectively. It was concluded that imipramine was a potent antidepressant drug. Also, from the data obtained, it was believed that the action is more or less specific on certain parts of the psychic structure. The results as obtained in the study indicated the necessity of long-term application.

RICHARD H. HARRISON

Pyrimethamine

Chang S. Choi M.D., Seoul, Korea reports in *Arch. Ophthalmol. 60*:603 (Oct.) 1958, on intraocular penetration of pyrimethamine. Chemically, pyrimethamine (Daraprim) is 2,4-diamino-5-p-chlorophenyl-6-ethylpyrimidine, with the empirical formula $C_{12}H_{13}N_4Cl$. This chemical was synthesized by the Wellcome Research Laboratories, Tuckahoe, N.Y., as an antimalarial drug which arrests plasmodial development at those stages involving nuclear division. Besides this antimalarial activity, pyrimethamine has been shown to have an extraordinarily potent antimetabolite activity. Intraocular penetration of Daraprim in the rabbit eye was studied by paper-disc-assay method, with use of *Streptococcus faecalis* as an indicator. With a single intravenous injection of pyrimethamine a prompt satisfactory blood level was obtained within 15 minutes and this level acutely fell in less than 2 hours. Regardless of the single dose given, no pyrimethamine was detected in the aqueous humor and vitreous humor of normal rabbit eyes, but a trace of pyrimethamine was detected in the secondary aqueous humor and in the aqueous humor of chemically inflamed rabbit eyes. Prolonged subconjunctival injection therapy with Daraprim solution containing 0.05 mg. in 0.5 ml. produced subclinical uveitis but did not cause cataract. Six milligrams of pyrimethamine per kilogram of body weight was the maximum safe dose in the rabbits when it was given intravenously as a single dose. Dr. E. N. Whitman, Burroughs Wellcome & Company, Inc. provided the pyrimethamine chemical.

WILLARD E. HERSHBERGER

SKF No. 5—New Antidepressant Drug

SKF No. 5, 2 aminol (3,4-methylene-dioxyphenyl) propane hydrochloride is an analog of dextro amphetamine sulfate. It increases motor and mental activity but blocks response to a conditioned escape stimulus. In a psychiatric division, 25 seriously depressed patients were treated with this drug and improvement was noted in 76 percent of the group. However, no significant improvement was noted in 32 schizophrenic patients who were given various doses of SKF No. 5. The observable side effects were not of a serious nature, but the development of high levels of alkaline phosphatase in 12 patients suggests that further appraisal of these findings should be done in a longer range study. The effective dose appears to be between 60 and 300 mg. per day. Initial doses of SKF No. 5 should be as low as 25 to 30 mg. per day. This report was presented by Friedhoff *et al.* in *J. Nerv. Ment. Dis. 127*:185 (Aug.) 1958. SKF No. 5 was supplied by Smith, Kline and French Laboratories.

SYLVIA SCHMIDT

Plasmanate, A New Plasma Substitute For Pediatric Therapy

A study by Cock, Binger, and Dennis shows that Plasmanate apparently meets the needs in therapeutic emergencies quite well. To cope with the conditions of shock associated with acute dehydration of diarrhea, toxemia or infection, Plasmanate offers many advantages. It is immediately available in a clear free-flowing solution. It offers a virtually potassium-free electrolytically hypotonic solution. Other advantages are its oncotic activity equivalent to plasma and it is physiologic protein material. The solution is also free from infectious agents, pyrogens, toxins, and antigens. It was found in the study, and reported in *Calif. Med. 89*:257 (Oct.) 1958, that administration of low initial sodium chloride loads was associated with a more consistent reduction of acidosis at 24 hours and with a return to normal serum chemical values at 72 hours. Plasmanate, which has relatively more sodium than chloride and negligible potassium content, would be an almost ideal solution for the initial therapy in infants with acidosis, dehydration, and electrolyte depletion.

RICHARD H. HARRISON

Timely Drugs

Caytine

CHEMICAL NAME: alpha (alpha-Methyl-e,4-methylene-di-oxyphenethylamino)-methyl -protocatechuyl alcohol hydrochloride.
INDICATIONS: To provide prompt and prolonged relief in cases of asthma, emphysema, bronchitis, and bronchiectasis.
DOSAGE: According to physician.
PREPARATIONS: Inhalation 1:100; injection 0.5 mg. per ml.; tablets 2 mg.; and tablets 2 mg. with pentobarbital 32 mg.
PACKAGING: Inhalation, 10 ml. bottles with dropper; injection, 1 ml. ampuls in packages of 4 ampuls; tablets plain or with pentobarbital, bottles of 50 tablets.
SUPPLIER: Lakeside Laboratories.

Cosa-Signemycin

COMPOSITION: Glucosamine-potentiated tetracycline with triacetyloleandomycin.
INDICATIONS: A great variety of bacterial infections such as gram-positive and gram-negative bacteria, rickettsiae, spirochetes, large viruses, and certain protozoa.
SIDE EFFECTS AND CONTRAINDICATIONS: Occasional cutaneous allergy to oleandomycin has been reported.
DOSAGE: Adults, 1 Gm. divided into 4 equal parts; children, proportionately less depending on age, weight, and severity of illness; infants, 10 to 20 mg. per lb. per day.
PREPARATIONS: Capsules of 125 mg. and 250 mg.; pediatric drops, raspberry-flavored, 5 mg. per drop; and oral suspension, raspberry-flavored, 125 mg. per 5 ml.
PACKAGING: Capsules, 125 mg., bottles of 25 and 100 capsules; capsules, 250 mg., bottles of 16 and 100 capsules; pediatric drops, bottles of 10 ml.; oral suspension, bottles of 60 ml.
SUPPLIER: Pfizer Laboratories.

Equanitrate

COMPOSITION: Meprobamate (Equanil) and pentaerythritol tetranitrate.
INDICATIONS: For prophylaxis of angina pectoris.
SIDE EFFECTS AND CONTRAINDICATIONS: Should be given with caution to patients with glaucoma.
DOSAGE: One or two tablets before meals and at bedtime.
PREPARATIONS: Tablets containing meprobamate 200 mg. and pentaerythritol tetranitrate 10 mg.
PACKAGING: Bottles of 50 tablets.
SUPPLIER: Wyeth.

Halodrin

COMPOSITION: Fluoxymesterone (Halotestin) and ethinyl estradiol.
INDICATIONS: Oral androgen-estrogen combination for management of menopause, male climacteric, and osteoporosis.
SIDE EFFECTS AND CONTRAINDICATIONS: In the male, carcinoma of the prostate or other androgen-dependent carcinomas; in females, cancer of the breast, uterine cancer, or cancer of the cervix and ovaries.
DOSAGE: In menopause and male climacteric, one tablet 2 or 3 times daily; in osteoporosis, one or two tablets 3 or 4 times daily.
PREPARATIONS: Tablets containing fluoxymesterone 1 mg. and ethinyl estradiol 0.2 mg.
PACKAGING: Bottles of 100 tablets, scored.
SUPPLIER: Upjohn Co.

Neothalidine

COMPOSITION: Phthalylsulfathiazole (Sulfathalidine) and neomycin sulfate.
INDICATIONS: An intestinal antiseptic for bowel sterilization, in preoperative preparation of bowel of patients about to undergo intra-abdominal and anorectal surgery.
DOSAGE: One tablespoonful (15 ml.) of suspension every 4 to 6 hours, provides complete preparation of patient on a 24-hour basis, and bowel becomes virtually sterilized in 18 to 20 hours.
PREPARATIONS: Granules, in 120 ml. bottle, to be reconstituted with 90 ml. water, and containing in 120 ml. phthalylsulfathiazole 12 Gm. and neomycin sulfate 8 Gm.
SUPPLIER: Merck Sharp & Dohme.

Pagano-Levin Medium

COMPOSITION: Biologic indicator compound in a nutrient agar with neomycin.
INDICATIONS: For the differentiation of *Candida albicans* from other *Candida* species as well as other yeasts by simple visual appraisal. Neomycin sulfate is included for suppression of bacterial growth.
DIRECTIONS FOR USE: Using sterile swab, streak specimen on agar in vial, replace cap but do not close tightly, incubate for 2 to 3 days at room temperature. Color intensity of the yeast colonies after incubation provides a convenient and rapid means of distinguishing pathogenic *Candida albicans* from other non-pathogenic *Candida* species.
PACKAGING: Single tubes.
SUPPLIER: E. R. Squibb & Sons.

TACE with Ergonovine

COMPOSITION: Chlorotrianisene (TACE) and ergonovine maleate.
INDICATIONS: Postpartum breast engorgement and uterine atony.
SIDE EFFECTS AND CONTRAINDICATIONS: Prolonged use should be avoided although ergotism has not been reported following use; because of its oxytocic activity, the preparation should not be administered prior to the completion of the first stage of labor.
DOSAGE: Two capsules every 6 hours for 6 doses; for best results, the first dose should be given within 8 hours after delivery.
PREPARATIONS: Capsules containing chlorotrianisene 25 mg. and ergonovine maleate 0.1 mg.
PACKAGING: Bottles of 12 and 60 capsules.
SUPPLIER: Wm. S. Merrell Co.

as the president sees it—

ROBERT C. BOGASH, *Lenox Hill Hospital, New York City*

► LOOKING DOWN THROUGH A COLORADO SKY affords a native Easterner a different exposure to the topography. It is crystal clear. The lake stippled plains are easily identified as they gradually rise into the impressive, yet foreboding, snow covered Rockies. From that crow's nest vantage I could not help but be impressed with both the immensity and grandeur of our land.

With a little observation one realizes that each part of the panorama while graphic in its own is still but an integer of the whole. Removed from its natural habitat it is comparatively less impressive. Alone, devoid of natural, biologic and environmental complements it would languish. As part of the whole each serves a purpose far more important than providing a singular pleasure. How true this is of us too. How frequently we tend to examine only our own particular phase of a problem. How quickly we forget the whole and overdramatize our particular interest. How effortlessly we focus thought and drive into a single channel.

This subjectivity I am told is a human tendency which when overworked can lead to a distressing condition which might be termed, "self-imposed myopia." Reflecting on this problem I can recall that it is not unusual to find secondary invaders in the form of external factors which tend to complicate the basic condition. Such factors might be poor communication, misinterpretation, difference in basic goals and perhaps even a shortage of insight.

In that reflective mood I could not help but review the regrettable Philadelphia incident where a major firm has filed a complaint and cited a hospital pharmacist for "substitution." As related to me, the situation occurred in this fashion—a member of the medical staff asked if he could borrow a small quantity of a proprietary product. He would return the same quantity at a later date he promised. When told by the pharmacist that the desired drug was available under the non-proprietary name only, the physician accepted it. The product was labeled with the descriptive non-proprietary name. No prescription was written. Again he promised to return an equal quantity of the drug borrowed. Apparently the transaction was an oblige, or as we know it, a K.O.W. The hospital administration, medical staff, and pharmacy strongly denied the charge of "substitution." The issue now rests with the State Board of Pharmacy. At this writing, to the best of my knowledge, no inquiry has been made nor decision rendered.

Unfortunately, there followed frequent and free airings in the public press. Headlines claimed hospitals were "switching drugs" and "endangering patients lives." Garbled stories gouged deep furrows in the public's faith in hospitals. Pharmacy, particularly hospital pharmacy, suffered too. Even now, several months later, in both the lay and trade press there continues publicity detrimental to hospitals and hospital pharmacy. Just who released this story to the public press is not yet clear. Such notoriety was and is both unjustified and malicious, particularly since neither inquiry or decision has been made by the State Board of Pharmacy.

The above was prepared for publication in November, 1958.

At the same time the same newspaper carried another story claiming another large Philadelphia hospital had been repeatedly warned against "substituting." The medical director promptly and publicly denied ever having received such warnings. Of interest was a simultaneous and equally questionable blast against retail practitioners. Of peculiar interest was the timing—all releases were made during the week of the N. A. R. D. Convention, which met in Philadelphia.

Unless this is coincidence a cynic might suspect some organized effort to discredit the practitioners of pharmacy—especially those serving in hospitals.

The entire situation deserves critical study—the occurrence, the sequence, the newspaper leaks and what, if any, motivations prevailed.

Let us review the first situation where a hospital pharmacist was cited to the State Board of Pharmacy. What is deplorable to me is the manner in which this was done. The pharmaceutical industry, singularly and collectively, recognizes the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS as the professional organization representing hospital pharmacy and its practitioners. There is established liaison between the two, and patent channels of communication exist. The firm involved could have contacted the ASHP and requested the SOCIETY to act as intermediary in this issue. The ASHP does not condone unethical practices and is repeatedly on record condemning "substitution."

I maintain that this would have been the preferable course of action. Instead it was given directly to the State Board of Pharmacy. By means unknown it appears it was leaked to the lay press with the resultant notoriety and damage. In the past, industry generally has not used the open channel of communication. Quite possibly it would serve all to mutual advantage if better communication be established, listened to and weighed objectively.

There is another thought I want to reflect on and it concerns the good faith extended to industry by hospital pharmacists. Many hospital practitioners today have mechanical weighing and counting devices. Every so often they encounter either a short count or weight. Others will discover an item misbranded or mislabeled. Still other practitioners will experience the sharp selling practices promising tie-ins, give aways, delivery of substantial sample material with a purchase to reduce the purchase price, dispensing legended drugs to nurses in an effort to have them recommend the drug to the physician, and other nuances of the trade.

Discovering such a manufacturing or packaging error the average hospital pharmacist is quick to call the firm concerned and report his findings. Conversely, what might be the impact if instead he notified the Food and Drug Administration or other interested agencies. While an interesting thought—do not misinterpret it—no one gains from internecine struggles. As noted before, each part is but an integer of the whole and alone would certainly languish.

Robert C. Bogash—

THE LAW of hospital pharmacy

edited by GEORGE F. ARCHAMBAULT

THE TAX-FREE ALCOHOL AND SPIRITUOUS LIQUOR PROBLEMS

(Continued from November Issue of the JOURNAL)

► THE TAX-FREE ALCOHOL and spirituous liquor problem as it relates to hospitals was outlined in the November (1958) issue of the AMERICAN JOURNAL OF HOSPITAL PHARMACY. It was noted that there are four problems involving the use of tax-free alcohol and spirituous liquor. These included the following:

(1) The use of tax-free alcohol where no charge is made for the medication containing tax-free alcohol but a nominal clinic or outpatient fee is charged;

(2) The legal need for the $50 medicinal spirits tax stamp or the $50 occupational retail liquor dealer tax stamp;

(3) The prepackaging and dispensing of spirituous liquors; and

(4) The use of tax-free alcohol in the Pathology Department of the hospital in instances where the pathologist charges the patient and others for his services.

Problems one, two, and three were covered in the November issue of this JOURNAL and the following information on problem four concludes the information available at this time.

Problem 4. The use of tax-free alcohol in the Pathology Department of the hospital in instances where the pathologist charges the patients and others such as a neighboring hospital for his services.

It is reported that a Western hospital whose pathology laboratory had been serving several smaller hospitals with tissue examination service at no cost has been required to pay back taxes because of alleged violation of the Alcohol Tax Act. The facts as reported indicated that the pathologist charged for his professional service. It was held that this charge constituted competition to commercial laboratories who must use tax-paid alcohol.

The use of tax-free alcohol is illegal where a pathologist is paid directly by other hospitals or by the patients, and the pathologist, in turn, pays his base hospital a proportionate cost of the operating expenses of the laboratory, based on the number of tissues examined for others.

H.R. 7125. "Excise Tax Technical Changes Act of 1957" passed the House and Senate this past year. Its Section 5214 (c) will allow tax-free alcohol to be used by *any* pathology laboratory *exclusively* engaged in making analyses or tests for hospitals and sanitariums. Patients served, however, must be hospital patients and not private non-hospitalized patients or physicians. It would appear that a hospital will soon be able to serve neighboring hospitals under conditions previously in law violation. However, until new regulations are issued by the Federal Government to this respect, one should not consider the present position of the Alcohol and Tax Unit changed.

Obviously, the Director of the Alcohol and Tax Unit is as concerned with these four problems as are the officials of the American Hospital Association and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. However, until the laws are changed or new regulations approved, government officials, hospital administrators and pharmacists must abide by these codes and regulations. All in hospital administration familiar with the problems are concerned with these rulings that are increasing hospital costs. It is felt by many that this is contrary to the present public policy of the Federal Government, a policy designed to give economic relief to non-profit hospitals and clinics that have responsibility for the care of the nation's indigent. One questions too whether such rulings and laws are consistent with the objectives of the President's Health Program as that program relates to the aged, chronically ill, and hospitalized citizentry of the land.

Interested in Furnishing Information?

Are you and your administrator sufficiently interested in the four problems covering the use of tax-free alcohol and spirituous liquors in hospitals as reported in this column, to send to the editor of the AMERICAN JOURNAL OF HOSPITAL PHARMACY, University of Michigan Hospital, Ann Arbor, Michigan, answers to the following questions as they relate to your hospital? This information has been requested of us by the Washington Office of the American Hospital Association. They in turn are working with Federal officials on these problems. A sufficient number of replies would be most helpful in preparing a countrywide factual report of the problem.

Use of Tax-Free Alcohol and Spirituous Liquor In Hospitals

Questionnaire

NAME OF HOSPITAL _____ STATE _____

NUMBER OF BEDS _____

NUMBER OF OUTPATIENTS ANNUALLY _____

STATUS OF OUTPATIENT DEPARTMENT. SELF-SUPPORTING _____

PERCENT SELF-SUPPORTING _____ %*

FEE CHARGED FOR OUTPATIENT VISIT VARIES FROM $_____ TO $_____

DEFINITION OF OUTPATIENT _____

ESTIMATED PERCENT OF OUTPATIENTS *not* CHARGED A FEE _____ %

ESTIMATED PERCENT OF PATIENTS CHARGED A PARTIAL FEE _____ %

PHARMACEUTICAL PREPARATIONS USED IN OUTPATIENT PHARMACY ACTIVITIES THAT INVOLVE THE USE OF

ETHYL ALCOHOL _____

_____

_____

WHISKEY N.F. IS USED OR PRESCRIBED IN OUR HOSPITAL FOR THE FOLLOWING PURPOSES:

1. SENILE AND AGED PATIENTS AS TONIC AND APPETIZER _____
2. TUBERCULOSIS PATIENTS AS TONIC AND APPETIZER _____
3. ANTISEPTIC ON COTTON SWABS IN CIRCUMCISIONS OF MALE INFANTS _____
4. POST-OPERATIVELY FOR ALCOHOLICS _____
5. FOR BLOOD DONORS AT BLOOD BANK _____
6. OTHER USES—ENUMERATE _____

   _____
7. WOULD YOUR HOSPITAL FAVOR PATIENTS PROCURING THEIR OWN LIQUOR IF LIQUOR IS ORDERED AS A MEDICATION?

   YES _____ NO _____
8. WOULD YOUR HOSPITAL OBJECT TO A PATIENT RECEIVING THE MINIMUM AMOUNT PACKAGED IN YOUR STATE (PINT OR MINIATURE) AS A PRESCRIBED UNIT _____ (FEDERAL NARCOTIC REGULATIONS INSIST ON THE TAX STAMP BEING BROKEN PRIOR TO DISPENSING. THE NARCOTIC ACT ALSO ALLOWS FOR REPACKAGING - FEDERAL ALCOHOL LAWS AND REGULATIONS REQUIRE DISPENSING WITH TAX STAMP INTACT. NO PREPACKING IS ALLOWED.) YES _____ NO _____
9. COMMENTS: _____

   _____

   _____

*Fees and charges received are estimated to cover what percent of the cost of the operation of the outpatient department?

News

NPC Annual Meeting

Mr. Carl K. Raiser, Director of Distribution of Smith Kline and French Laboratories, was re-elected President of the National Pharmaceutical Council at the December 11 meeting held in New York City. Speaking before top industry leaders and representatives of pharmaceutical organizations at the Annual Luncheon, Mr. Raiser commented on the NPC's plans for expansion with emphasis on the area of hospital pharmacy. In this connection, Mr. Raiser introduced Mr. William E. Woods, a new member of the NPC staff who will conduct the hospital pharmacy program.

Announcement was also made of the Council's program to work with educators and plans for a seminar for pharmacy school professors of administration. The American Association of Colleges of Pharmacy will cooperate with the NPC in the industry-education program.

Other officers of the National Pharmaceutical Council named to serve during the coming year include Mr. Newell Stewart who was re-elected Executive Vice President.

Newly elected vice presidents include Nelson M. Gampfer, Chairman of the Board of the Wm. S. Merrell Co.; Paul Gerden, Secretary and General Counsel of Abbott Laboratories; and Henry S. McNeil, McNeil Laboratories, Inc.; George W. Orr, Jr., President of Ames Company, Inc. was re-elected as a vice president.

ASHP President Robert Bogash (center) talks with Dr. August Groeschel (left) of the New York Hospital and Mr. William Woods (right) of the National Pharmaceutical Council

Also re-elected were Wilbur E. Powers, Secretary; L. J. Sichel, Vice President and Counsel of Ciba Pharmaceutical Products, Inc., Treasurer; and Franklin P. O'Brien, Vice President of G. D. Searle & Co., Executive Committee Chairman.

Hospital Formulary Service Available

Approximately 3,000 copies of the *American Hospital Formulary Service* are being shipped by the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS from Hamilton Press, Hamilton, Illinois, during the last week of January. Orders requiring special imprinting on the binders will be delayed approximately one week.

The Service, incuding binder, tabs for dividing the various classifications of drugs, and supplements for one year (1959), makes available to the nation's hospitals a unique aid in selecting drugs and preparations for individual hospital formularies. The original mailing includes more than 600 monographs along with approximately 1100 preparations.

The February issue of this JOURNAL will be devoted to providing background information on the Formulary Service and its application, along with a listing of monographs and preparations for submitting to the Pharmacy and Therapeutics Committees and members of the medical staffs of hospitals for selection of preparations for their formularies. Hospital pharmacists using the Service are urged to review the formulary system and accepted procedures for its use in hospitals.

The individuals responsible for publication of the Formulary Service regret the delays in filling orders but assure those who have placed orders that every possible effort has been made to provide the Service at the earliest possible date.

Orders for the *American Hospital Formulary Service* may be directed to: AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, The Hamilton Press, Hamilton, Illinois. The price of the Formulary Service, which includes a subscription to receive supplementary drug monographs for one year is $15.00 per copy for less than 10 copies; $14.50 a copy for 10 to 24 copies; and $14.00 a copy for 25 or more copies.

I. T. Reamer Honored

I. T. Reamer, Chief Pharmacist at Duke Hospital, Durham, N. C., was recently honored by the North Carolina Pharmaceutical Association for "exceptional and meritorious service to the advancement of public health and welfare." Mr. Reamer, who has been active in national pharmaceutical activities as well as state, is a past president of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS and served as the organization's first Secretary.

Others honored in the same manner by the North Carolina Association included Dean Edward A. Brecht of the University of North Carolina School of Pharmacy; David F. McGowan, a Lilly Medical Service Representative of Chapel Hill; and Ralph P. Rogers, Jr., a Durham pharmacist.

New Publication

Tables of Contents Bulletin is the title of a new publication recently launched by The Academy of Medicine of New Jersey in conjunction with the Medical Documentation Service of the College of Physicians of Philadelphia. It is a weekly publication based on the journal acquisitions of the two sponsoring libraries. TCB covers between 550 and 600 journals in the chemical, pharmaceutical and medical field, with their inclusion in each weekly issue within 5-10 days after receipt.

A full list of titles of publications covered by *Tables of Contents Bulletin* is available on request. Annual subscription rates are as follows: 1-2 copies, $75.00 per copy; 3-5 copies, $70.00 per copy; 10 copies, $65.00 per copy; 30 copies, $45.00 per copy; and 50 copies, $35.00 per copy. Rates of multiple copy orders not specified are proportional, and will be quoted upon request. Orders may be directed to The Academy of Medicine of New Jersey, 91 Lincoln Park, Newark 2, New Jersey.

IPSF News Bulletin

IPSF News Bulletin is the name of the publication of the International Pharmaceutical Students' Federation which is edited by Mr. J. Glen Moir of the Faculty of Pharmacy of the University of British Columbia, Vancouver 8, Canada. The IPSF is affiliated with the International Pharmaceutical Federation and is an organization of local and national pharmaceutical student societies throughout the world devoted to the study and promotion of the interests of pharmaceutical students and the encouragement of international cooperation among such students.

The *IPSF News Bulletin* is included in membership fees or is available on subscription for one dollar per year. Orders may be directed to J. G. Moir at the address given above.

Columbia Offers Graduate Program

A graduate program of education in hospital pharmacy will be instituted in the Columbia University College of Pharmacy beginning with the fall of 1959, according to an announcement made recently by Dean E. E. Leuallen. Several teaching hospitals in greater New York have indicated an interest in cooperating in the program which involves the completion of 30 graduate credits in the College and the full internship program as outlined by the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS in an accredited hospital pharmacy.

Pointing out that over half of the course work required for the new program is already available in Columbia's graduate offerings, the Dean stated that specialists from hospital practice will handle such new courses as must be added.

In a message concerning the new program addressed to the Board of Trustees of the College, Dean Leuallen stated, "never before has the hospital pharmacist faced so many challenging opportunities to demonstrate his scientific, professional and administrative capabilities. The graduate of this new program, schooled in biochemistry, modes of drug action and toxicology, knowing the techniques of formulation and stabilization, aware of the significance of quality control, and experienced in administrative functions, will add new dimensions to the service offered in many hospitals."

The Dean commented further—"the great metropolitan area of New York, with its many hospitals, offers a great array of career opportunities for the hospital pharmacist. By the same token, there is placed at the disposal of the intern, an unparalleled choice of working conditions for gaining practical experience." In the Columbia program, it is anticipated that interns will receive experience in more than one hospital pharmacy.

Texas Seminar Scheduled

Plans have been announced for the Eleventh Annual Hospital Pharmacy Seminar sponsored by the Pharmacy Extension Service of the University of Texas in Cooperation with the Texas Society of Hospital Pharmacists. Meetings will be held on Saturday and Sunday, February 14 and 15 with a meeting of the Texas Society on Friday Evening, February 13.

Heading the list of guest speakers will be ASHP President Robert Bogash and Vice-President Clifton Latiolais. Other participants include leading physicians and pharmacist from throughout the Texas area.

Lewis Smith Honored

Lewis Smith, Chief Pharmacist at Baylor University Hospital in Dallas, Texas, was recently honored for thirty years' service at his hospital. Special recognition of hospital employees receiving service awards was made at a dinner held on October 30 at Dallas Memorial Auditorium. Mr. Smith, a charter member of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, has been active in the national organization and was instrumental in organizing the Texas Society of Hospital Pharmacists.

SELECTED PHARMACEUTICAL ABSTRACTS

and summaries of other articles interesting to hospital pharmacists

edited by CLIFTON J. LATIOLAIS *and* LEO F. GODLEY

PYRROLIDION-METHYL-TETRACYCLINE, EVALUATION OF

Clinical Experimental Research with a New Intramuscular Injectable Tetracycline, Haude, H., Aerztliche Wochenschrift 13:776 (35, 36) (Sept.)1958.

The tetracyclines thus far on the market show a number of disadvantages in parenteral as well as in oral administration. Reverin (pyrrolidion-methyl-tetracycline) was tested and the results of the study of the blood and urine levels, as well as the clinical effects of this new tetracycline derivative, were published. Chlortetracycline (Hostacyclin Hoechst) was used for comparison. *Bacillus cereus myocides* was used as the test organism by the method of Dimmling, Holle and Carstensen. Determination of resistance of the pathological organisms in the 157 cases tested showed that (1) none of them reacted to penicillin, (2) only a few had feeble reactions to streptomycin, and (3) all showed a remarkable growth-inhibiting effect to tetracycline and chloramphenicol.

Both preparations (Reverin and Hostacyclin) were examined after a single intramuscular injection of 100 mg. Blood levels were determined hourly. Urine levels were determined after the injection of 275 mg. Results show that blood levels after the injection of 100 mg. intramuscularly over a period of six hours are approximately 25% higher than after chlortetracycline is injected in the same dosage. There was an average blood level of 1 mcg./ml. and a therapeutic blood level over a period of 24 hours. Even after 30 hours urine levels show relatively high tetracycline values in which maximal and minimal excretions do not present any substantial difference from average values. In over 1,000 intramuscular injections no case of irritation or infiltration at the site of injection was observed. Little or no pain resulted from the administration of 100 mg. of the drug intramuscularly. After the injection of 275 mg. intramuscularly the patient suffered the same type of transient pain as is observed after the injection of potassium penicillin G. No side effects of the gastrointestinal tract were found. The injection of 275 mg. of the drug every 12 hours is recommended only in infections which are highly septic.

The author concludes that Reverin represents an advancement in the development of the tetracyclines for antibiotic therapy.

OTMAR M. NETZER

PENICILLIN PATENT

Stabilization of Penicillin Salts, Lepetit, S.p.A., Brit. 792,027, Mar. 19, 1958.

The addition of 0.5-5% of an alkaline earth chloride to a penicillin salt prevents deterioration and discoloration. Use of 5% calcium chloride is described.

JOACHIM ANSCHEL, CHEMICAL ABSTRACTS, 16702g

HYPOPHOSPHITE SYRUP CONTAINING FERROUS IONS

Factors Effecting Color-Changes in the Hypophosphite Syrup Containing Ferrous Ions, Szepesy, A., Acta Pharm. Hung. 27:165-74, 1957.

The color changes in hypophosphite syrup containing ferrous ion can be only partially attributed to the oxidation of ferrous ion to ferric; the simultaneously occurring decomposition of sugars, and the subsequent interaction between the breakdown products and the Fe ions contribute substantially to the discoloration of the syrup.

A. LASSLO, CHEMICAL ABSTRACTS, 16698a

HYPOPHOSPHITE SYRUP

Color-Changes in the Hypophosphite Syrup, Kovacs, L., Acta Pharm. Hung. 27:175-91, 1957.

Changes occurring in the "compound hypophosphites syrup" (Hungarian Pharmacopeia V) on storage were studied. The discoloration of the syrup was attributed to the oxidation of the sugars by atmospheric oxygen; the reaction is catalyzed by Fe and Mn salts; the rate of decomposition increases at elevated temperatures and decreases (almost to 0) at low temperatures; ultraviolet irradiation blocks decomposition and inhibits partially the potentiating effect of increased temperatures.

A. LASSLO, CHEMICAL ABSTRACTS, 16698b

BINDING AGENTS

A Comparative Study of Polyvinylpyrrolidone and other Binding Agents in Tablet Formations, Lehrman, G. P. and Skauen, D. M., Drug Standards 26:170 (Sept.-Oct.) 1958.

The authors describe the results obtained from formulation studies which represent an evaluation of the usefulness of polyvinylpyrrolidone as a binding agent in a number of different tablet formulations. Comparison studies were made of this agent against several common binders available. Tablet formulations of five different medicinals were prepared: sodium bicarbonate, aspirin, ascorbic acid, magnesium carbonate, and sodium salicylate. The binders used were: polyvinylpyrrolidone solutions, acacia mucilage, starch paste, and syrup. Acceptable formulations of each agent were made, using standard wet granulation procedures, with compression on a single punch press. A determination was then made of the effect of each binding agent on granule formation, fines production, compressibility, disintegration time, hardness, appearance, and friability. Aging studies for all formulations were made at both 40°C and at room temperature to determine the effects of normal and accelerated aging on the various physical characteristics of the tablets. Polyvinylpyrrolidone was found conclusively to be an acceptable binding agent in the formulations studied, as it proved to be an effective and stable binding agent comparable or better than the control binders.

It is interesting to note that polyvinylpyrrolidone was found to exert a very fine stabilizing effect upon aspirin formulations.

Investigational results representing friability and appearance, as applied to tablets, proved to be inconclusive.

THOMAS E. ARKINSON

PATENT ON MANNITOL FOR STABILIZATION

Mannitol-Stabilized Morphine-Papaverine Compression, Roger K. Lager (to Sterling Drug, Inc.). U.S. 2,836,451, May 27, 1958.

Solutions are described which contain morphine and papaverine, suitable for injection and stabilized against deterioration and discoloration. Distilled water is freed of oxygen by bubbling nitrogen through it, and then 30.0 Gm. of mannitol and 32 Gm. of papaverine hydrochloride are dissolved in about 900 ml. of this water. Next, 16 Gm. of morphine sulfate is dissolved and the solution is adjusted to pH 3.8-3.9 with 1N sodium hydroxide. The solution is diluted to 1 liter, filtered, and filled into ampuls which are then sealed and sterilized. During all the manipulations it is necessary that the containers be flooded with nitrogen to avoid bringing the solution into contact with oxygen or air.

VINCENT J. SAWINSKI, CHEMICAL ABSTRACTS, 1763oa

ANTIHISTAMINE ELIXIR

The Formulation of an Antihistamine Elixir, Barr, M., Tice, L. F., Am. J. Pharm. 129:385 (Oct.) 1957.

The use of antihistamine therapy is quite widespread in children and thus an elixir of such drugs is desirable. The elixir must of course have maximum taste appeal and should not have too high an alcohol content. The use of some polyol for its sweetening and bodying effect is better than syrup, in such elixirs. The authors selected chlorpheniramine maleate as the antihistamine since it is highly favored by many pediatricians. The polyols studied for relative merit, were glycerin and Sorbitol Solution N.F. Propylene glycol was eliminated because of its known poor flavor.

Elixirs containing 2 mg. of chlorpheniramine maleate per 5 ml. were prepared in which the concentration of alcohol and polyol was varied. Various combinations were prepared in which the alcohol content ranged from 10 to 20% and the polyol content from 25 to 65%. A combination of 0.01% benzaldehyde and 0.02% vanillin was used as the flavoring agent throughout; 0.1% Amaranth Solution U.S.P. XV was the coloring agent in all cases.

It was found that a combination of 10% alcohol and 45% Sorbitol Solution N.F. was the most satisfactory. The authors found that a formulation using these concentrations and the above flavoring and coloring agent concentrations remained stable for 1 year at 25° C. and 4° C.

A 30 member taste panel of students was formed to evaluate the merits of the sweetening agents, glycerin, and sorbitol solution. The panel concluded that the elixir containing 45% w/v sorbitol solution was superior to one containing glycerin on either an equal volume or equal weight basis. The glycerin imparted an acrid taste which was not pleasant. Sorbitol solution is also more desirable than sucrose in this type of elixir since the latter undergoes inversion after a period of time, resulting in a change of color, taste, and consistency of product.

The final formulation of Chlorpheniramine Elixir is as follows:

Chlorpheniramine Maleate	0.4 Gm.
Benzaldehyde	0.1 ml.
Vanillin	0.2 Gm.
Amaranth Solution	1.0 ml.
Alcohol	100.0 ml.
Sorbitol Solution	450.0 ml.
Purified Water, to make	1000.0 ml.

DOUGLAS SILVERNALE

OINTMENT PATENT

Spreadable Ointments, Merz & Co., Chem. Fabrik, Ger. 932,817, Sept. 8, 1955.

Dry mucilage powder, mixed with sodium carbonate and diluted or concentrated whey, yields salves or ointments which are easily spread and useful for treating mucous membranes. Disinfectants, such as boric acid, potassium 8-quinolinol and chloramine, can be added. The pH of the ointment is fixed by addition of lactic acid, AcOH, or boric acid. For example, 3 Gm. sodium carbonate and 297 Gm. tragacanth powder were thoroughly mixed and soaked with 10 liters diluted whey containing 250 Gm. of boric acid or 100 Gm. liquid aluminum acetate tartrate.

BEATRICE DEL BONDIO-REVENTLOW, CHEMICAL ABSTRACTS 17624g

THIMEROSAL SOLUTIONS

Stabilization of Thimerosal Solution, N.N.R. 1950, Fujita, T. and Vazakas, A. J., Drug Standards 26:165 (Sept.-Oct.) 1958.

Thimerosal solution, on standing for a prolonged period of time, very often will undergo decomposition with the formation of a precipitate. This article describes the investigation of one of the factors responsible for this precipitation. Solutions of thimerosal are incompatible with the ions of heavy metals. A reaction occurs between the alkaline solution and its glass container which results in bringing into the solution, traces of heavy metals. To overcome this incompatibility, the authors incorporated various sequestering agents into the formula of thimerosal solution as an investigational effort to convert these ions of heavy metals into soluble and unreactive forms. Best stability resulted in the use of a mixture of sodium potassium tartrate and citric acid.

Based upon the findings of this investigation, a new formula for Thimerosal Solution was submitted as a formula of much greater stability than the one which is currently official. Evaluation of the antibacterial effect of this new formula has shown that it does not differ significantly from that of the official formula. The formula recommended was as follows:

Thimerosal	1.00 Gm.
Monoethanolamine	1.00 Gm.
Ethylenediamine	0.28 Gm.
Sodium Potassium Tartrate	1.00 Gm.
Sodium Citrate	0.08 Gm.
Citric Acid	0.32 Gm.
Sodium Chloride	8.30 Gm.
Distilled water, to make	1000 ml.

THOMAS E. ARKINSON

QUATERNARY AMMONIUM COMPOUNDS

Further Studies on Germicide-Cell Surface and Germicide-Enzyme Reactions Employing Low Temperatures, Kravitz, E., Stedman, R. L., Anmuth, M., Harding, J., Am. J. Pharm. 130:301 (Sept.) 1958.

In the past it was thought that leakage of cell contents (lysis) was the main factor in the antibacterial action of the quaternary ammonium compounds. Recent work has shown that enzyme inactivation contributes more extensively to cell death than lysis *per se*, except in the presence of extremely high concentrations of the quaternary ammonium compound. These studies have also suggested the possibility of additional factors being involved in cell death. The authors describe work done on an extension of the above studies.

The results of their experimentation conducted on *Serratia marcescens* showed that mechanical leakage of cell contents probably plays a minor role in cell death, except at very high concentrations of the quaternary ammonium compound. These was little change in lysis between temperatures of 0° and 30° C. at any given exposure time. However, through the same temperature range the rate of cell death does vary considerably. The authors felt that there is a probable parallel between cell death and the lowering of enzyme activity, although not necessarily on a quantitative basis. Other factors which might play a part in cell death are such things as interference with growth, reproduction, permeability, and the possible variable importance of different factors at different temperatures.

The experimentation was conducted between temperatures of 0° and 30° C. using *Serratia marcescens*, 5 representative substances, a quaternary ammonium disinfectant, and a radioisotopic technic.

DOUGLAS SILVERNALE

METALLIC SURFACTANTS, SYNTHESIS AND BIOTESTING OF

Synthesis and Biotesting of Metallic Surfactants, Bone, J. N. J., O'Day, D. W., J. Am. Pharm. Assoc., Sci. Ed. 47:795 (Nov.) 1958.

The silver, mercury, lead, zinc, copper and iron salts of lauryl sulfate, dioctyl sulfosuccinate, and isopropylnaphthalene sulfonate have been made. The activity of these has been determined against *Micrococcus pyogenes* var *aureus*, *Pseudomonas aeruginosa* and *Trichophyton mentagrophytes*. The activity of the copper, iron, zinc, and lead salts of the surfactants against the bacteria was increased over the activity of their corresponding chlorides, nitrates or sulfates. There was a decrease in activity in the mercury and silver surfacants against the bacteria. The antifungal activity of all 6 metals was increased in the form of the surfactant salts as compared with their corresponding chloride, nitrate, or sulfate salts. Of the 3 surfactants used, alkyl sulfate appeared to increase the activity of iron, mercury, and silver more than the other two against *Micrococcus aureus*. The alkyl sulfate salts of mercury and silver were more active against *Trichophyton mentagrophytes* than the same salts of the other two surfactants.

HENRY J. DEREWICZ

ULTRASONICS IN ALKALOID EXTRACTION

The Application of Ultrasonic Energy to the Extraction of Belladonna Leaf U.S.P., Wray, P.E., Small, L.D., J. Am. Pharm. Assoc., Sci. Ed. 47:823 (Nov.) 1958.

The authors present a method of extracting the alkaloids of Belladonna Leaf *U.S.P. XV* which utilizes the energy of ultrasonics. By subjecting the maceration slurry of belladonna leaf to ultrasonic energy having a vibrational

frequency of 500 kilocycles per second in a specially designed treatment vessel a considerable shortening of maceration time was achieved. The normal 8 hour (overnight) period of maceration was shortened to approximately 20 minutes and the subsequent Soxhlet extraction yielded an almost identical amount of alkaloids. Decomposition of the alkaloids by ultrasonic waves and their accompanying effects was not evident under the conditions employed. Also, normal hydrolysis products were not present in detectable concentrations by use of the Rameike circular paper chromatographic procedure. It is interesting to note that ultrasonic extraction in the submerged method of treatment indicated a decrease in particle size. The results of this ultrasonic method of extracting alkaloids may be summarized as follows: a yield of alkaloids comparable to present methods, a greatly shortened extraction period, a reduction of particle size, and a method which possesses possible commercial application.

HENRY J. DEREWICZ

VISCOSITY vs. pH OF TRAGACANTH

The Effect of pH on the Stability, Schwarz, T. W., Levy, Gerhard, and Kawagoe, H. H., J. Am. Pharm. Assoc., Sci. Ed., 47:695 (Oct.) 1958.

Continuing their investigations on tragacanth solutions, the authors report on the results of studies on the effect of pH on the stability of tragacanth solutions, buffered at various pH values, and subjected to accelerated storage tests. The rate of viscosity decrease of the solutions was used as the measure of degradation.

Various buffer systems were used at each given pH in order to detect effects that may be specifically due to the buffer components, rather than to pH. It was thus found that citrates caused a rapid viscosity loss regardless of pH. The authors suggest that this is probably due to their complexing with calcium present in the tragacanth.

Graphs are presented which show that the gum is most stable at a pH slightly above 5 and that the viscosity decreases markedly during storage when the pH differs by more than ½ unit from the optimum.

WARREN MCCONNELL

PHENOBARBITAL SOLUBILITY

The Effect of Hydrogen Ion and Alcohol Concentration on the Solubility of Phenobarbital, Edmonson, T. D., and Goyan, J. E., J. Am. Pharm. Assoc., Sci. Ed., 47:810 (Nov.) 1958.

The reported study was carried out in order to verify and correct existing solubility data on phenobarbital as a function of pH and alcohol concentration.

The phenobarbital samples were assayed spectrophotometrically. The absorbance spectra were determined in three different solutions. Each solution consisted of 10^{-4} moles of recrystallized phenobarbital dissolved in one liter of the solvent. Solvent 1 was distilled water, solvent 2 a dilute buffer solution with a pH of 9.91, and solvent 3 a 4.6 M sodium hydroxide solution. Graphs of the spectra are shown which illustrate two absorbance maxima at 240 and 244 m_μ.

The solubility of phenobarbital as a function of alcohol concentration and as a function of pH plus alcohol concentration was determined. The data are presented in graphical and tabular form.

The results showed that it was necessary to go to fairly high concentrations of alcohol before the solubility of free phenobarbital increases significantly. The authors conclude, however, that the concentration of phenobarbital generally required to yield an average dose of 30 mg. can be obtained with 35% alcohol at pH 7.0 or 10% alcohol at pH 8.0. Thus, it would appear that a solution of phenobarbital could be made to contain therapeutic amounts at much smaller concentrations of alcohol if the pH were also adjusted.

WARREN MCCONNELL

CHLOROBUTANOL AS A PRESERVATIVE

Preservative Action of Chlorobutanol in Combinations with Certain Other Bacteriostatic Agents, Deeb, Edward N., and Boenigk, John W., J. Am. Pharm. Assoc., Sci. Ed., 47:807 (Nov.) 1958.

Chlorobutanol was solubilized with Tween 20. A concentrate containing 10% chlorobutanol and 40% Tween 20 in distilled water could be diluted to 0.5% chlorobutanol concentration with distilled water or isotonic sodium chloride solution. The 0.5% solution was found to be no more irritating or sensitizing to the eyes of rabbits than was a control solution of 0.5% chlorobutanol alone.

Fifty percent solutions of chlorobutanol in both benzyl alcohol and phenylethyl alcohol were also tested for irritation and sensitization. The combination of chlorobutanol with phenylethyl alcohol was found to be slightly more irritating than the control.

The preservative properties of each of the three chlorobutanol combinations were tested against pathogenic organisms isolated from actual hospital patients. Results showed that the combination of chlorobutanol with Tween 20 was less effective as a preservative than aqueous solution of chlorobutanol alone. On the other hand, combinations of chlorobutanol with phenylethyl alcohol and benzyl alcohol appeared to have greater preservative action than either chlorobutanol or aqueous solutions of the alcohols alone.

WARREN MCCONNELL

pH DEPENDENCE OF PRESERVATIVES

The Effect of pH on the Efficiency of Various Mold Inhibiting Compounds, Bandelin, F. J., J. Am. Pharm. Assoc., Sci. Ed., 47:691 (Oct.) 1958.

Twelve antifungal agents were investigated for their effect against the molds *Chaetomium globsum, Alternaria solani, Penicillium citranum,* and *Aspergillus niger,* at pH levels of 3, 5, 7, and 9. The mold spores were inoculated upon the surface of a modified Sabouraud's agar, enriched with yeast extract and containing concentrations of the preservative compounds up to a maximum of 0.2%. Criterion of inhibition was lack of visible growth in all of five tubes at any concentration after incubation at 30° for fourteen days.

The antifungal activities of all preservatives decreased with increasing pH. Greatest loss of activity was observed with benzoic, salicylic, propionic, and sorbic acids. The esters of p-hydroxybenzoic acid were only slightly affected by pH changes. The authors conclude that these esters have the greatest utility as preservatives for pharmaceutical preparations in general.

WARREN MCCONNELL

CURRENT LITERATURE

. . . also calling your attention to the following articles appearing in recent hospital and pharmaceutical journals

. . . . . .

LAWS AND REGULATIONS

Vance, Joe: Who's Responsible for Safe Hospital Pharmacy? *South. Hosp.* 26:65 (Dec.) 1958.

LIABILITY INSURANCE

Overton, Philip R.: The Pharmacist Must Look to His Liability, *Modern Hosp.* 91:100 (Dec.) 1958.

PARENTERAL SOLUTIONS

Avis, Kenneth E.: Basic Decisions Related to Preparation of Parenteral Solutions, *Am. Profess, Pharm.* 24:926 (Dec.) 1958.

PHARMACOLOGY

Martin, M. G.: Sizing up the Tranquilizers, *The Hospital Pharmacist* (Canada) 11:288 (Nov.-Dec.) 1958.

PROFESSIONAL RELATIONS

Chabak, L. L.: Communications and Interdepartmental Relations—The Pharmacist's Viewpoint, *The Hospital Pharmacist* (Canada) 11:293 (Nov.-Dec.) 1958.

Clark, J. S.: Communications and Interdepartmental Relations—The Nurse's Viewpoint, *The Hospital Pharmacist* (Canada) 11:292 (Nov.-Dec.) 1958

SAFETY PRACTICES AND PROCEDURES

Sister Mary Vera, S.M.: Operation Safety, *Hosp Progress* 39:126 (Dec.) 1958.

WRITING

Houston, Mervyn J.: Writer's Cramps, *The Hospital Pharmacist* (Canada) 11:287 (Nov.-Dec.) 1958.

DRUG EVALUATIONS

by the Council on Drugs of the American Medical Association

► THE FOLLOWING MONOGRAPHS and supplemental statements on drugs have been authorized by the Council on Drugs of the American Medical Association for publication and inclusion in *New and Nonofficial Drugs*. They are based upon the evaluation of available scientific data and reports of investigations. In order to make the material even more valuable, dosage forms and preparations of individual drugs have been added to the monographs. These dosage forms and preparations were not taken from material published in the *Journal of the American Medical Association* by the Council on Drugs; rather, they were obtained from such manufacturers' brochures, news releases, etc., which were available to us at the time of publication. An attempt has been made to make the list of dosage forms as complete as possible. However, no guarantee can be made that the list of preparations is complete and it is suggested that hospital pharmacists consult manufacturers' releases for additional dosage forms and preparations.

The issues of the *Journal of the American Medical Association* from which each monograph has been taken is noted under each monograph. Monographs in this issue of the JOURNAL include those published in the *Journal* to Oct. 25, 1958.

Notice

New and Nonofficial Drugs 1958 is now available from your local bookstore and from the publishers, J. B. Lippincott Company, Philadelphia, Pa. This 1958 edition contains monographs of drugs evaluated by the Council on Drugs of the American Medical Association and published in the Journal of the A.M.A. to January 1, 1958. The index listed below contains those drugs evaluated and published between January 1, 1958 and October 25, 1958.

Index

TO DRUGS EVALUATED IN THIS ISSUE

Index

TO EVALUATED DRUGS IN THE JANUARY THROUGH DECEMBER 1958 ISSUES OF THE AMERICAN JOURNAL OF HOSPITAL PHARMACY.

Oleandomycin Phosphate Matromycin® Phosphate

Oleandomycin Phosphate is the phosphate salt of an antibiotic substance elaborated by species of Streptomyces antibioticus. The compound has an empirical formula of $C_{35}H_{61}NO_{12}.H_3PO_4$, but its precise chemical structure has not as yet been determined.

Actions and Uses

Oleandomycin phosphate exhibits antimicrobial activity in vitro against gram-positive organisms, being most active against staphylococci, streptococci, and pneumococci. It likewise inhibits the in vitro growth of a few gram-negative bacteria, notably Hemophilus influenzae, gonococci, and meningococci. Oleandomycin has negligible activity against coliform bacteria and other gram-negative organisms of the enteric group.

Oleandomycin phosphate is useful for the treatment of certain infections due to gram-positive coccal organisms such as Staphylococcus pyogenes var. aureus, beta-hemolytic streptococci, and pneumococci. However, in beta-hemolytic streptococcic or pneumococcic infections, penicillin or the tetracyclines are usually considered to be the agents of choice. In regard to Staph. pyogenes var. aureus, there is in vitro and clinical evidence to show that oleandomycin is active against strains of this organism, including some that are resistant to other commonly employed antibiotics. Thus, the drug has been employed successfully for the treatment of a variety of the milder and more severe staphylococcic infections, especially those refractory to erythromycin, penicillin, streptomycin, and the tetracyclines.

On the basis of both in vitro susceptibility tests and clinical experience, the actions and uses of oleandomycin appear to be quite similar to those of erythromycin. In general, both antibiotics are employed for the same type of infections and are subject to similar limitations in spectrum and effectiveness. There is some evidence to indicate the usefulness of oleandomycin against such gram-positive organisms as alpha-hemolytic streptococci and non-hemolytic

streptococci. It has also been used in infections caused by such gram-negative organisms as meningococci, gonococci, or H. influenzae, but, except for gonorrheal infections, the evidence is inadequate to substantiate such use. Some evidence of in vitro activity against certain viruses, rickettsias, and protozoa has been presented; however, there is insufficient clinical evidence to substantiate its effectiveness against such micro-organisms.

On the basis of present knowledge, prolonged therapy with oleandomycin can produce oleandomycin-resistant strains of staphylococci. Staphylococcic cross resistance between oleandomycin and erythromycin can occur in some freshly isolated strains, although most erythromycin-susceptible strains are susceptible to oleandomycin. Complete cross resistance between oleandomycin and erythromycin, carbomycin, and spiramycin can be rapidly and regularly developed in vitro. Accordingly, as with any antibiotic, accurate bacteriological identification of the infecting organism and susceptibility tests are indicated before initiating therapy. When indicated, oleandomycin should be administered in sufficiently large amounts to control the infection before resistance can develop, and susceptibility tests should be repeated to insure that the organisms remain susceptible to its action. The valuable antistaphylococcic properties of oleandomycin can best be preserved by preventing its indiscriminate use.

The toxicity of oleandomycin seems to be low. Side-effects reported thus far have been limited to occasional reactions of cutaneous hypersensitivity, loose stools, and, rarely, diarrhea. The possibility of overgrowth of non-susceptible organisms (notably Candida) exists but is considered to be much less likely than when the broader spectrum antibiotics are used.

Dosage

Oleandomycin phosphate is administered orally, intravenously, and, occasionally, intramuscularly. The oral dosage for adults ranges from 250 to 500 mg. four times daily, the amount administered depending on the type and severity of the infection. The suggested dosage for children is approximately 30 mg. per kilogram of body weight per day given in divided doses.

For intravenous use, a sterile dry powder of the drug is diluted with either sterile water for injection, isotonic sodium chloride for parenteral use, or sterile 5% dextrose solution to make at least 250 cc. of solution not to exceed 2 mg. per cubic centimeter. This diluted solution is then infused slowly at a rate not to exceed 20 mg. (10 cc.) per minute. In the average adult, 1 to 2 Gm. daily, administered in divided doses every 6 to 12 hours, should be sufficient for most acute infections. In severe and fulminating infections, a daily maximum of 3 Gm. may be utilized in adults. In infants and children, the usual intravenous dose is 40 mg. per kilogram of body weight daily. Care should be taken to avoid extravasation of the drug into adjacent soft tissues. Oral therapy should be substituted for intravenous infusion as soon as feasible.

In occasional instances in which neither oral nor intravenous therapy is feasible, oleandomycin phosphate may be administered by intramuscular injection. Since the drug is irritating to the tissues by this route, it should be mixed with a local anesthetic prior to injection. For use, 7.5 cc. of a 1 to 2% solution of procaine hydrochloride is added to 500 mg. of the dry, sterile powder of oleandomycin phosphate, so that each 1.5 cc. of the resulting solution will contain 100 mg. of the antibiotic. The usual intramuscular dose for adults is 200 mg. every six to eight hours by deep intragluteal injection, alternating sites and buttocks being used. Dosage for infants and children is reduced according to age, weight, and severity of infection. Extreme care should be taken to avoid injecting the solution containing procaine into a vein. Likewise, this solution should not be injected subcutaneously or into the fat layer; inadvertent injection into these tissues may cause pain and induration. Intramuscular therapy should be discontinued as soon as medication by the oral route is feasible.

Preparations: capsules 250 mg.; powder (injection) 500 mg.

Applicable commercial names: Matromycin, Oleandomycin Phosphate.

Pfizer Laboratories, Division of Chas. Pfizer & Co., Inc., and Wyeth Laboratories, Division of American Home Products Corporation, cooperated by furnishing scientific data to aid in the evaluation of oleandomycin phosphate.

J.Am.Med.Assoc. ***168***:**1011 (Oct. 25) 1958.**

Preparations

Capsules Oleandomycin (Matromycin) Phosphate 0.25 Gm.
Injection Oleandomycin Phosphate 0.5 Gm.

Triacetyloleandomycin

Cyclamycin®
TAO®

TRIACETYLOLEANDOMYCIN is the triacetyl ester of an antibiotic elaborated by species of Streptomyces antibioticus. The compound has an empirical formula of $C_{41}H_{67}NO_{15}$, but its chemical structure has not been determined.

Actions and Uses

Triacetyloleandomycin has the same actions and uses as oleandomycin phosphate. After oral administration, the triacetyl ester is more rapidly and completely absorbed from the gastrointestinal tract than is the same amount of the phosphate salt. Hence, it produces higher blood levels, and fewer or less frequent doses may be used.

Dosage

Triacetyloleandomycin is administered orally. Dosage is the same as that for oleandomycin phosphate.

Preparations: capsules 125 mg. and 250 mg.; suspension (oral) 25 mg. per cc.

Applicable commercial name: Cyclamycin.

Wyeth Laboratories, Division of American Home Products Corporation, cooperated by furnishing scientific data to aid in the evaluation of triacetyloleandomycin.

J.Am.Med.Assoc. ***168***:**1012 (Oct. 25) 1958.**

Preparations

Capsules Triacetyloleandomycin (Cyclamycin; TAO) Phosphate 125 mg. and 250 mg.
Suspension Triacetyloleandomycin (Cyclamycin; TAO) 125 mg. per 5 ml.; 60 ml. bottles.

Chemical Laboratory

The Chemical Laboratory has authorized publication of the following statement.

WALTER WOLMAN, PH.D., *Director.*

Monographs of tests and assays for new and nonofficial drugs adopted by the Chemical Laboratory of the American Medical Association represent an expression of opinion as to what might constitute adequate tests and assays to serve as a reference guide to those interested in the identity and quality of a new and nonofficial drug.

Completed monographs are published in the journal of *Drug Standards* for those interested in the details of the procedures. Monographs on the following drugs have appeared in the July-August, 1958, issue of that journal. The cooperation of the listed pharmaceutical firms that furnish samples and data is acknowledged.

Aminopentamide sulfate.....**(Bristol Laboratories, Inc.)**
Decamethonium bromide ..**(Burroughs Wellcome & Co., Inc.)**
Phensuximide .....**(Parke, Davis & Co.)**
Piperazine calcium edathamil.....**(Endo Laboratories, Inc.)**
Sitosterols .....**(Eli Lilly & Company)**
Tetrahydrozoline hydrochloride .....**(Pfizer Laboratories)**

J.Am.Med.Assoc. ***168***:**1012 (Oct. 25) 1958.**

POSITIONS

in hospital pharmacy

PERSONNEL PLACEMENT SERVICE

The Personnel Placement Service is operated without charge for the benefit of hospitals and pharmacist members of the American Pharmaceutical Association and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. The ultimate purpose is the improvement of pharmaceutical services in hospitals, by more adequately fulfilling hospital pharmacy personnel needs and by locating positions which provide challenging opportunities for pharmacists who have indicated an interest in a hospital career.

By participating in the service, the hospital indicates a desire to achieve a pharmaceutical service which meets the *Minimum Standard for Pharmacies in Hospitals.* A description of the position should be submitted to the Division of Hospital Pharmacy on the forms provided. The hospital will receive applications directly from the applicant. The hospital agrees to reply to each application received and to notify the Division of Hospital Pharmacy when the position is filled.

The pharmacist, by participating, agrees to submit a Personnel Placement Service Information Form to the Division of Hospital Pharmacy. The applicant will then be notified of openings listed with the Service as they become available and can negotiate directly with the hospital if he is interested. It is agreed that the Division of Hospital Pharmacy will be notified as soon as a position is accepted.

A listing of positions open and wanted will be made regularly in the AMERICAN JOURNAL OF HOSPITAL PHARMACY without charge. Neither the name of the hospital offering the position nor the name of the applicant will be listed, except by code. All inquiries should be directed as shown above, including the code number.

Address all inquiries to

Division of Hospital Pharmacy
2215 Constitution Avenue, N. W.
Washington, 7, D. C.

positions open

CHIEF PHARMACIST—350 bed hospital. Must be eligible for licensure in N.J.; interest in manufacturing; 44-hour week, 2 weeks' vacation. Salary $5200-$5700. PO-6

STAFF PHARMACIST—550 bed general hospital located in Ohio. 40-hour week; 2 weeks' vacation. Salary $400-$450. PO-34

ASST. CHIEF PHARMACIST—310 bed general hospital located in Va. 40-hour week, 2 weeks' vacation, 3 weeks' sick leave, 6 holidays. Salary $5,000 to $6,000. Also
STAFF PHARMACIST—259 bed hospital located in Va. Hospital experience preferred. 40-hour week, 2 weeks' vacation. Salary open. PO-35

STAFF PHARMACIST—Large teaching hospital located in N.C. 42 hours per week, 4 weeks' vacation. $450 per month. One meal per day. PO-38

STAFF PHARMACIST—460 bed general hospital in Mass. 40 hour week 2 weeks' vacation; other benefits. PO-40

ASST. CHIEF PHARMACIST—Large voluntary hospital located in Brooklyn; N.Y. registration required. Supervisory ability needed. 35-hour week, 2 weeks' vacation, 10 days' sick leave, 9 holidays. PO-51

CHIEF PHARMACIST—88 bed hospital located in Pa. Planning expansion to 125 beds for general patients and 40 beds for chronic patients. Possibility for pharmacist to serve as Asst. Administrator in charge of Purchasing, Central Supply and Store Room. 40 hour week; 2-4 weeks' vacation. Young man preferred. Salary open. PO-59

STAFF PHARMACIST—325 bed research hospital. Min. 2 years' experience preferably in hospital pharmacy. N.Y. registration required. Manufacturing sterile solutions and assisting in product development. Salary $4770-$5860 plus benefits. Research work beyond 40-hour week available at $3.00 per hour. PO-61

ASST. CHIEF PHARMACIST—350 bed general hospital located in Ill. Liberal benefits, 40 hour week, 3 weeks' vacation. Air-conditioned pharmacy. Salary $450 per month. PO-62

ASST. CHIEF PHARMACIST—100 bed general hospital. Ind. registration required. Young lady preferred. Hospital experience not necessary. Main area of responsibility in Central Supply and Solution Manufacturing. 40 hour week, 3 weeks' vacation. PO-63

PHARMACIST—Animal hospital located in Colo. Duties include maintaining drug stock and checkout service, also willing to help students. 44 hour week, 4 weeks' vacation. Salary $5,000. PO-64

CHIEF PHARMACIST—75 bed hospital located in Mich. To be responsible for pharmacy with possibility of assuming other hospital administrative duties. 40-hour week, 2 weeks' vacation. Salary open. PO-66

CHIEF PHARMACIST—325 bed general hospital. Eligible for registration N.Y. Hospital experience desirable but not necessary. 40-hour week, 2 weeks' vacation. Salary depending upon qualifications. PO-70

ASST. CHIEF PHARMACIST—313 bed general hospital. Eligible Ky. registration. Previous hospital experience not necessary. 40-hour week, 2 weeks' vacation. Salary $400-$500, benefits. PO-73

CHIEF PHARMACIST—265 bed general hospital. Varied duties including teaching if interested. No experience required. 40-hour week, 2 weeks' vacation. Salary $400 (approx.) plus benefits. PO-74

STAFF PHARMACIST—335 bed hospital located in Fla. Duties include responsibilities in outpatient department and parenteral solution room. 40-44 hour week, 2 weeks' vacation; 1 meal daily. Salary $5200. PO-75

CHIEF PHARMACIST—New 110 bed hospital, will include 365 bed hospital to be opened in May or June, 1959. 44-hour week, 2 weeks' vacation. Salary to be negotiated. PO-76

ASST. CHIEF PHARMACIST—237 bed general hospital in West Va. Female desired. 44-hour week; 2 weeks' vacation. PO-77

STAFF PHARMACIST—503 bed general hospital. Inpatient and outpatient prescriptions; manufacture of some injectibles. Male or female. Interested in recent graduate with hospital experience desirable but not required. 40-hour week; 2 weeks' vacation; other benefits. PO-78

STAFF PHARMACIST—500 bed general hospital. Prefer female. Eligible for Ohio registration. 40-hour week; 2 weeks' vacation; other benefits; salary approx. $440. PO-79

CHIEF PHARMACIST—320 bed general hospital located in Iowa. Experience or internship in hospital pharmacy required. 40-44 hour week, 2 weeks' vacation, other benefits. Salary open. PO-80

STAFF PHARMACIST—316 bed general hospital. Eligible registration in Minnesota. Some manufacturing 40-hour week 2 weeks' vacation; other benefits. Salary open. PO-81

STAFF PHARMACIST—360 bed teaching hospital. N.C. registration required. 42 hour week. PO-82

MANUFACTURING PHARMACY SUPERVISOR—To supervise manufacturing department of large teaching hospital pharmacy; excellent facilities and equipment; must have experience in manufacturing pharmacy and be eligible for registration in Illinois. Also ISOTOPE PHARMACIST—To assume responsibility for dispensing of radiopharmaceuticals in large teaching and research hospital; will also include work on research projects as part of a team; will train; manufacturing experience desirable and eligibility for registration in Illinois. PO-84

ASST. PHARMACIST—340 bed general hospital. Registration in N.C. required. Includes assuming administrative duties during absence of Chief Pharmacist. 44-hour week, 3 weeks' vacation; other benefits. Salary $5,000-$6,000 depending upon experience. PO-85

STAFF PHARMACIST—295 bed hospital expanding to 500 in future. Eligible for registration in Mich. Experience in hospital pharmacy and manufacturing preferred. 40-hour week, 2 weeks' vacation. Salary $5720. PO-86

ASST. CHIEF PHARMACIST—256 bed general hospital located in Ind. 40-hour week, 3 weeks' vacation; other benefits. Salary open. PO-87

CHIEF PHARMACIST—450 bed general hospital expanding to 565 beds; to assume complete charge of professional and administrative responsibilities in the Pharmacy Department. Male, with hospital training and/or experience, eligible for licensure in La. Forty hour week, 3 weeks' vacation; salary up to $10,000 per year, depending upon experience and qualifications. PO-88

ASST. CHIEF PHARMACIST—325 bed hospital; 40 hour week; 4 weeks' vacation; salary $5,000. Must be eligible for registration in Pa. PO-89

CHIEF PHARMACIST—400 bed general hospital. B.S. required. Internship in hospital pharmacy preferred. Eligible for Tex. registration. 40-hour week, 2 weeks' vacation. Salary up to $6,000 to start. PO-90

CHIEF PHARMACIST—355 bed general hospital with large outpatient dept. Pharmacy will have two registered pharmacists and two more nonprofessional assistants. 40-hour week plus ½ day alternate Saturday. Meals free while on duty, 100% hospitalization, 25% discount on hospitalization for immediate family. 2 weeks' vacation, 12 days sick leave, discount on drugs, pension plan. Now upgrading entire hospital program, which will include a well planned hospital pharmacy program, and teaching. Starting salary $6800 - $7,000. PO-91

ASST. CHIEF PHARMACIST—315 bed general hospital. Registration in Iowa required. Experience desirable but not essential. 40-hour week, 2 weeks' vacation. Salary $450. PO-92

ASST. PHARMACIST—360 bed general hospital, located in N. J. Prefer graduate of hospital internship program. 40-hour week. Salary $90. PO-93

ASST. CHIEF PHARMACIST—185 bed general hospital. Must be eligible for licensure in Ind. B.S. required. 40-hour week. Salary $4500 to $5500. PO-94

STAFF PHARMACIST—500 bed general hospital located in Okla. B.S. required. 40-hour week, salary open. PO-95

STAFF PHARMACIST—400 bed general hospital. Eligible registration in Fla. 40-hour week, salary open. PO-96

STAFF PHARMACIST—1000 bed govt. general hospital. Registered or able to reciprocate with state of Ohio within one year. Will be trained in all departments including bulk manufacturing; preparation sterile solutions and dispensing. Age 22-35. 40-hour week, salary $5200-$5616. PO-97

CHIEF PHARMACIST—425 bed hospital. Male preferred. Mo. registration. Will train good applicant without experience. 40-hour week. Salary open. PO-98

positions wanted

CHIEF PHARMACIST—(or Asst. Pharmacist at large hospital); prefers vicinity of St. Louis; now employed as staff pharmacist at hospital. Registered in Mo. PW-13

PHARMACIST—N.J. registration; prefers Pa., Fla., D.C., or Va., experience in managing retail pharmacy. PW-18

CHIEF PHARMACIST IN A TEACHING HOSPITAL—Registered Ind., Mich., and Mo.; prefers general hospital in Midwest; experience in teaching and in hospital pharmacy. PW-26

PHARMACIST—Registered in Ohio since 1934; also registered in Vt. desires to locate in Vt. Experience in retail pharmacy only. PW-27

PHARMACIST—Prefers vicinity of Chicago; registered in Ill., now employed there. Graduate of Univ. of Ill. College of Pharm. PW-31

CHIEF PHARMACIST OR ASST. PHARMACIST—Prefers medium size hospital; registered in Ind., Mich., and Wis. 8 years' experience chief pharmacist and purchasing agent. Prefers Midwest or East. PW-32

CHIEF PHARMACIST—Male, married, B.S. working on M.S. Hospital pharmacy experience. Registered Pa. PW-42

PHARMACIST—Male, married; B.S. 4 years' retail experience Army Dispensary. Registered N.Y. desires to locate in East. PW-44

CHIEF PHARMACIST—M.S. degree in hospital pharmacy; prefers East; male, single; extensive experience, including pharmacy and administrative office in Air Force. PW-62

CHIEF PHARMACIST—Registered in Tenn., La., Tex.; prefers South; graduate Univ. of Tenn., School of Pharmacy. PW-64

INDIAN PHARMACIST—Desires appointment to obtain higher training in hospital pharmacy; graduate Madras Univ.; 1½ years' experience in 1,000 bed hospital, including inpatient and outpatient dispensing, parenteral and general manufacturing and administration. PW-68

STAFF PHARMACIST—Female, married; internship at Freedman's Hospital; experience in hospital pharmacy. B.S. Prefers D.C. area. Registered in Ind., D.C. and N.C. PW-72

CHIEF PHARMACIST—Female, single; hospital experience. Desires position 100 bed hospital. B.S. Registered Ky. Prefers Ky. PW-73

HAITIAN STAFF PHARMACIST—Male, married. Has 5 years' hospital experience. Present owner of pharmacy. Desires to locate in northwest U.S. PW-74

STAFF PHARMACIST—4 years' hospital pharmacy experience; prefers Wash. state (registered). Female married, B.S. pharmacy. PW-87

IRANIAN PHARMACIST—Desires opportunity to continue hospital pharmacy studies; single, age 30; excellent academic background; now studying industrial chemistry Columbia Univ. Prefers location in West or Northeast. PW-88

ASST. CHIEF PHARMACIST—Female, single; B.S. 1 year hospital pharmacy internship; registered Okla. Prefers West or Southwest. PW-89

ASST. PHARMACIST—Female, married. Educated and trained in Philippines. Served hospital pharmacy internship. Registered Manila. Desires to locate East Coast of U.S. PW-91

CHIEF PHARMACIST—Prefers small hospital in Ohio. Male, married. B.S.; registered Ohio. Excellent academic and professional background. PW-93

STAFF PHARMACIST OR ASST. CHIEF—Female, single, Filipino, educated and trained Philippines. 10 years' hospital experience. Served hospital pharmacy internship. PW-95

PHARMACIST—Male, married. Registered Ill. Desires to locate in New England. PW-102

STAFF PHARMACIST—Single female, registered Mo. B.S.; hospital pharmacy experienced. Desires locate Midwest. PW-104

PHARMACIST—Filipino, female. B.S. pharmacy, Univ. of Philippines. Desires locate Washington, D.C. PW-107

STAFF PHARMACIST—Male, single registered Del. Served hospital pharmacy internship. Prefers East. PW-109

STAFF PHARMACIST—Male, single. Served hospital pharmacy internship, plus 2 years U.S. Army pharmacist. Registered Washington, D.C. PW-110

CHIEF PHARMACIST—Female, single, registered Penna. 12 years' experience Chief Pharm. Desires to locate in Penna., Ohio. PW-111

STAFF OR ASST. CHIEF PHARMACIST—Male, single, registered Mass. Retail experience plus 2 years hospital corpsman USN. Desires to locate around Boston, Mass. PW-112

CHIEF OR ASST. CHIEF PHARMACIST—Male, married, registered Mich. and Ariz. Served hospital pharmacy internship. Retail experience plus 7 years' hospital pharmacy experience. PW-113

STAFF PHARMACIST—Male, married, registered Mass. Retail and hospital pharmacy experience. Desires locate East or Northeast. PW-114

CHIEF OR STAFF PHARMACIST—Female, single, registered Tex. Desires to locate in East. PW-115

STAFF PHARMACIST—Female, single, B.S. Retail experience only. Registered Fla. PW-116

ASST. CHIEF PHARMACIST—Male, single. B.S. Vet. Adm. Hosp. Registered Va. and Washington, D.C. PW-117

STAFF PHARMACIST—Male, married. B.S. registered La., Va., and Washington, D.C. PW-118

ASST. DIRECTOR OR DIRECTOR OF PHARMACY SERVICES—Male, single, B.S. Retail and 4 years' hospital experience. Registered, Ill. PW-119

ADMINISTRATOR—Male, married, D.Sc. 15 years' hospital pharmacist. Desires locate Fla. PW-120

PHARMACIST—Male, single. B.S. Registered Maine. Served hospital pharmacy internship. PW-122

CHIEF PHARMACIST—Male, single. Registered Conn. and N. J. 10 years' hospital pharmacy experience, B.S. PW-123

CHIEF PHARMACIST—Male, single. 10 years' hospital pharmacy experience. 1 year pharmacy internship. Registered Ariz., Ga., New Mexico, prefers south. PW-124

CHIEF PHARMACIST—Male, married. 8 years VA Hospital. Registered Mo., Tenn. and Ark., prefers locate in south. PW-125

CHIEF PHARMACIST—Female, single. B.S. 2 years' hospital experience. Registered Ohio. Prefers Ohio or Ill. PW-126

MEETING DATES

1959

April

Southeastern Society of Hospital Pharmacists
(In conjunction with Southeastern Hospital Conference April 8-10, Atlanta, Georgia. Atlanta Biltmore Hotel

Tri-State Hospital Assembly
(Includes Section on Hospital Pharmacy) April 27-29, Chicago. Palmer House.

May

Association of Western Hospitals
(Includes Section on Hospital Pharmacy) May 4-7, Salt Lake City, Utah. Utah Hotel

Catholic Hospital Association
Annual Convention, May 30-June 4, Saint Louis, Missouri

August

American Hospital Association
Annual Convention, August 24-27, New York City. Coliseum; Statler Hotel

American Pharmaceutical Association
Annual Convention, August 16-21, Cincinnati, Ohio

American Society of Hospital Pharmacists
Annual Meeting, August 16-18, Cincinnati, Ohio

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